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THE SCIENTIFIC TEMPER IN RELIGION

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THE SCIENTIFIC TEMPER IN RELIGION

AND OTHER ADDRESSES

BY THE

REV. P. N. WAGGETT, M.A.

OF THE SOCIETY OF ST. JOHN THE EVANGELIST

LONGMANS, GREEN, AND CO.

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"A Philosopher's life is spent in discovering that of the half dozen truths he knew when a child, such an one is a lie, as the world states it in set terms ; and then, after a weary lapse of years and plenty of hard thinking, it becomes a truth again after all, as he happens to newly consider it and view it in a different relation with the others."

ROBERT BROWNING
(Ogniben in *A Soul's Tragedy*, Act II.).

"Was kann der Mensch im Leben mehr gewinnen,
Als dass sich Gott-Natur ihm offenbare,
Wie sie das Feste lässt zu Geist verrinnen,
Wie sie das Geisterzeugte fest bewahre."

GOETHE
(*Bei Betrachtung von Schiller's Schädel*).

"Man through his life can win no richer prize
Than if he God-in-nature realise :
How that resolves the solid into soul
And keeps the soul's creations ever whole."

W. H. B.

"Ex uno Verbo omnia, et unum loquitur omnia : et hoc est Principium quod et loquitur nobis."

De Imitatione Christi, I. iii.

TO MY FATHER

PREFACE

The following chapters, with the exception of the last, are taken from shorthand reports of addresses given in St. Mark's Church, Marylebourne, in Lent and May 1903.

The first five were reported at the time in the *Guardian* and the *Church Times*, and I am much obliged to the Proprietors of those Journals, both for printing them then and for letting me print them now.

Besides informalities, interjections, parentheses, which would be avoided in a written lecture, there are some features of impromptu speech which are, I believe, in a measure necessary to keep a number of minds moving together. They limit the journey, for they greatly reduce its pace ; but they make it a journey in companionship. I mean the repetition of words and thoughts in detail, and the frequent and full recapitulation of the argument in broader lines.

Such marks of the nature of its origin I have

not been anxious to remove from the little book. They may serve to recall to some readers the intimacy which arises between generously considerate hearers and the man whose turn it is to speak; especially perhaps when what he has to say is, like Friar Brackley's sermon, "suddenly said."[1]

The experiment of dealing in Church with the subjects here touched was made at such hours as not to interrupt the regular sermons any more than the regular services.

Without further reference to the present imperfect essay, I venture to add three words about the general requirements of a conference upon such subjects as are here attempted.

First, such a conference is not to be used for giving rudimentary instruction in natural science. The topics discussed may be those known to the earliest student, but the knowledge must be assumed. Otherwise, the whole time available for the conference upon relations will be occupied in explaining one of the terms, and this under the

[1] Paston Letters, i, 511: A.D. 1460. Friar Brackley to William Paston.—"Jesu mercy, marie help, cum sanctis omnibus, trewe menyng executorys ffro fals terrauntes and alle tribulacyonys. . . . W. Y. Judex and hise wyf were here with here meny and here hors in our ladyes place . . . and I prechid on the Sonday byfore hem, not warnyd tyl after mete, and than for lak of M. Vergeant, or our Wardeyn Barnard, I sodeynly seyd the sermon."

worst possible conditions. The rudimentary instruction is to be done in a class-room or theatre, with a blackboard, raised seats, and specimens.

The hearers of the apologetical conference will be those who have the measure of information required, or are willing to gain it independently.

Secondly, while the speaker assumes some scientific knowledge in the hearers, the hearers must assume some religious knowledge in the speaker. He must not pause, or at least not often or long, to prove his own orthodoxy. The great doctrines of grace cannot be illustrated, though indeed they may be borne in the heart, by a man who is speaking of the procedure of the material creation. To take, for example, a topic not touched in this book: if one were speaking of the nature of man, of his hereditary equipment, and the means or machinery or field for free choice which exists in his fixed but manifold constitution, one must not be taken to describe a *substitute* for Divine Grace. The question of the origin of all good and saving motives is reserved; and attention is directed only to a part of the organism in which those motives operate.

A third point is, perhaps, practically most important. I believe that, in spite of what has just been said, all abstract discussions and all considerations of material facts must be warmed and

refreshed by frequent returns to thoughts and words of a different order; I mean words of personal appeal, of effort and aspiration, and concerned with social duty—in a word with the deeper knowledge which belongs to piety and love. I think it may be for lack of this refreshment that quasi-scientific Christian conferences are not persevered with. For nothing can hold the attention of a body of men as the simple words of religion can; and we have to keep close to that geniality, that encouraging sympathetic temper which I think Richter speaks of as belonging *essentially* to the sermon.

We must not hold back our spiritual appeal to some last address of a course, but keep it in view all along. Otherwise, the discussion, hard or simple, successful or unsuccessful on its own line, and even if it very completely and deftly covers a certain circle of debated points, will tend to evaporate and disperse that spirit of devotion for the sake of which the whole effort, first and last, is undertaken.

The title given to the second chapter, and practically to the book, indicates a desire to depart as far as possible from the initial attitude of the physician in Lytton's *Strange Story*, who, "keeping natural philosophy apart from the doctrines of revelation . . . never assailed the

last . . . left faith to religion and banished it from philosophy."

The great name of faith has too often been given to a frail conjecture or an illegitimate inference, supposed to afford a 'practical' substitute for knowledge where knowledge cannot be secured.

In thought as in action we know not well which faults are "scholars' faults," such as wise men "praise in hope of fruit."[1] But for this we might say, let us part, at whatever present loss and pain, with that mere simular of faith; and this not in order to concentrate all our trust upon the impressive witness of one part of reality; but in order that, accepting experience implicitly as a whole, and endeavouring perpetually to extend and deepen our intimacy with its unfolding lessons, we may advance towards a clearer and more fruitful apprehension of its various parts, and of the several functions of authority, meditation, logic, discovery, emotion, and obedience, and whatever else is found in a man's actual knowledge of all that is within and beyond his life.

The second motto is not given to recommend

[1] "Inter flagitia . . . sunt peccata proficientium: quae a bene judicantibus, et vituperantur ex regula perfectionis, et laudantur spe frugis sicut herba segetis."—S. Augustinis *Confess.* Lib. III. Cap. ix.

a pantheistic conception of *Gott-Natur*, but only to exclude the divorce of stuff and spirit which gives rise to all conflicts between Science and Religion. The *identification* of God with Nature robs us of all which makes religion real, and most evidently of hope. But we are free, or rather we are bound, to reassert the presence and power of God in Nature, so but we remember that He Who sustains, also infinitely transcends, the universe.[1] Process does not exclude purpose; but the purpose far exceeds the process we may ever discern. Stuff is not an alternative of spirit; but the spirit which energises in the very existence of stuff, energises also in fields of action far beyond that relative existence.

The English quatrain translating Goethe is a gift from the revered Master of the Charterhouse to his ever-grateful subject,

P. N. W.

WESTMINSTER,
August, 1905.

[1] See Appendix, p. 284.

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I

INTRODUCTORY

The situation—Reasons of the pause in controversy—The change is partial and local—A truce by estrangement—What is needed for a better understanding—In science a cautious temper—And a recognition of its own special foundation—In religion a scientific spirit.

A good deal might justly be said in criticism of our proposal to hold conferences during Lent upon subjects and points in which religious faith and practice are supposed to touch most closely upon natural science; and I am not without sympathy with the critics. But we must hope that the work we attempt will prove to be a work of charity, and that those who share with us in it may not be distracted from the more serious and real pursuits of Lent, for which many opportunities are offered them at other times, on the Sunday and in the week.

In future addresses I hope to treat of some special points or regions where religion is thought to touch most closely upon natural inquiry. I

admit that at present I have hardly any idea of what those subjects can properly be, and I should not be ungrateful for guidance.

The situation.

But to-day, before touching any special point, it seems to be our duty to consider, so far as our knowledge permits, what the general situation is in the world of thought with regard to these matters. For everybody must be aware, I think, that the situation has very much changed during the last twenty, and especially during the last ten years. There is much more courage among Christians. The friends of the spiritual life have been greatly reassured. There is a larger measure of wisdom on the side which used to be arrayed as if in opposition [1] to Christian doctrine. But, besides those changes for the better, there is something which certainly gives cause for regret. What we find is that people are not so much troubled by special criticisms urged against special doctrines of the Faith as beset by a general feeling of discouragement. If one may use the words which are so commonly used in private conversation about these things, a great many people are not prepared to argue upon any definite issue, but they have the sense that, with regard to religion, *the whole thing has gone* for

[1] I use the awkward expression, 'as if in opposition,' not only because the hostility of some critics was not a real hostility, but also because that which they opposed was not really Christian doctrine.

themselves. At some later time it would be useful to try to show one part, at any rate, of the process by which it has come to pass that religion has lost so much more in authority than can be accounted for by its actual losses in debate. I will not touch on this point now. At some future time we may devote to it some time and care.

There exists, then, in individuals scattered amongst us, an indistinct conviction that the whole thing, as they express it, has gone ; and it is plainly very difficult to deal with such a state of opinion as this. When the debate raged very briskly, and, month after month, in half the monthly magazines ; when we were constantly entertained by the clash of arms between aged statesmen and distinguished morphologists, then we could take up a particular point, and we were immensely encouraged on one side or the other by winning a point for our side. But you cannot by such means build up a soul which is oppressed with a sense of blankness in the whole spiritual outlook, and has lost sight of the wider world of moral and spiritual realities. That is a case not for argument, but for something much more like therapeutic treatment. Let us ask ourselves first how that change has come to pass. Why is it that the debate has come to an end ? Certainly it is not because we have settled all our questions.

There are, we may say, three main reasons. The first, which looms very large but is not actually most important, is that there have been certain readjustments of thought on the part of orthodoxy. The frame and shape of religious statement is different from what it was before the great storm of the last half of the nineteenth century began; and the difference is due in part to the influence of science. Much more important is the fact that natural science is in a thoroughly vigorous condition at present, and is consequently deeply occupied with its own problems; and there has been, moreover, an immense increase in the range over which natural investigation extends. An increase immense indeed! This is not the time to illustrate the growth of which I speak, but the result of such an increased range of observation is a much broader judgement, for instance, with regard to the nature of human life. And this is especially important because, both for technical philosophy and for thought in general, psychology is the absorbing study of our time. The wider range of study and the more broadly based judgement have resulted in an increased spirit of caution—caution both with regard to negative conclusions which at one time men were ready to draw very hastily, and caution, also, of a more hopeful kind. For, in fact, there are two

Reasons of the pause in controversy.

kinds of caution, the caution which makes a man unwilling to take strong measures because he fears he may soon be poorer, and the happier caution which makes a man unwilling to build his house of brick because, if he waits, he may soon be able to build it of marble. We know, in certain respects, so much more than we did twenty years ago, that men are inclined to say, "Let us be in no hurry to add up our total and strike the balance, because we may soon be much richer than we are." We are not so easily content as we used to be with short formulæ and phrases describing human nature; and we are a thousand miles from that confident materialism in philosophy which used, one might almost say, to rule in certain regions of learning and research. Things are different now. Materialism in the philosophical sense of the word—the materialism, for instance, of Büchner, whose books still sell by thousands—is not a thing against which metaphysics or idealism makes at present a stout fight. It is a thing of the past in any academic region you like to name in England or in Germany. There has been, then, a considerable change in the spirit of that opposite camp which was in the habit of speaking in the name of natural science. "In the name," we must say, because it is not natural science which is concerned with attacking our faith, but a certain school of religious thought

which speaks against another school of religious thought, namely the Christian, with the pretended authority of natural science. We ought, for instance, to think of Professor Huxley, *in this connexion*, as a *religious* teacher. It is not science itself which is hostile to Christianity, but a certain school of philosophy and religion which speaks in the name of science.

There are, then, these two changes : first, the readjustments in expression made by theology ; secondly, the native vigour, the preoccupation with their own problems, the greater philosophic caution, of the schools of natural science.

Thirdly, there has been a great change for *us*. We also are much more fully occupied with other things. We have grave difficulties of our own within the Church, some of them indeed of quite a material kind ; and even where the question is of theology itself, we see that theology has been so busy in modifying and guarding and checking the rapid advances of what are known as critical studies that there has been no time to consider whether or not the creed had a quarrel with philosophical materialism, or with the evolutionary interpretation of the world. We have been very much occupied with another class of debate. Almost the whole field of the theological consciousness has been taken up with the work of meeting, encouraging, modifying, checking,

and resisting, or again of guiding into hopeful channels, and seeking to express in fair forms, the results, on the one hand, of critical research, and, on the other, of religious self-inspection. We have, that is to say, been living through the period of Biblical studies; and we are now living in the period of Ritschlian theology, which asks us to consider what religion is before or even without inquiring for its historical supports. Men are much too hard at work in adjusting our new ideas of what religion is with the old words which already enshrine them, to be keenly interested about dangers supposed to arise from friction between the Bible record and the discoveries of natural science.

These three things have made a great change on what you might, without intending any offence to other regions, call the upper regions of educated thought. But the change has been very partial, very local. While we have been so happy in our truce, and have been pressing forward our own proper studies without quarrelling with one another, in other places the state of things has been quite different. There are questions which we do not pretend to have solved, but the difficulties of which we manage to bear with in our own life. We know that these still demand an answer; but though we continue to seek the answer we

The change is partial and local.

can work without it for the present. But these questions come before other sections of the community as if they were the latest and the most important. Take, for example, the case mentioned just now—the teaching of Büchner, or the teaching of Haeckel. In schools of metaphysical argument, men are not concerned any more about the contention, for example, that the mind secretes thought in the same way as our other organs secrete their various contributions to health. That famous phrase of Vogt's about thought and the bile was, we all recognize, a piece of rhetoric. A sensible man only needs a little time to see that it does not mean anything in particular. It sounds as if it were an important analogy, but it is impossible to attach any clear or distinct notion to the words. That is recognized. But the writings of these extreme materialists, who speak in the name of biology, sell by thousands still, I have been told, all over Germany and, so far as we are a reading people, to a great extent in England also ; and they are put into cheap forms, and thus reach quite new levels of the reading public. You have to remember that in the last twenty years a whole nation has newly come into possession of the art of reading ; and it has been stirred up, by these comparatively confined inquiries in natural science, into the delightful sense of sharing in speculative activity. And so

you will find that some very popular journals among us, some of those that appeal to the earnest, progressive, radical and socialist working man, are beginning of late to deal with these problems, and to put before their readers just those crude and hasty conclusions which, in such regions as you are familiar with, have been to a considerable extent analysed by reflexion, so that a part is assimilated in peaceable union with older elements of teaching, and a part is put on one side as, at any rate, unsatisfactory. They are now again put forward in their primary uncriticised form as brilliant discoveries capable of excluding the necessity of religion. We might further illustrate this by examples from all parts of the world. I came across an African chief who was defying his missionary on grounds which he drew from what he had heard about the evolutionary hypothesis. In China and Japan at present, you get, we are informed, the quarrels which used to occupy us between 1870 and 1880.

The peace, then, is very partial, and if we feel the claim of charity we must wish ourselves to grow in clear understanding of the sources of our own security and faith, so that we may not fail to do our part—and there is a part for us—in reassuring and building up the faith of others, and in keeping open the way for religious faith among those who are, in certain respects, in

the relation of younger brothers to us. For they are now meeting, in astonishment and distress, with difficulties which, as I have repeatedly said already, we do not see how to dispose of, but which, for certain good reasons of which it will be our business to speak, we find ourselves obliged to put up with and able to manage. For the trouble is not that the positive proofs of religion are wanting, but that, by being too much occupied with details, men's souls are gradually brought into a condition in which they are unable to be aware of and to appreciate the great world of life—of spiritual life, experience, struggle, duty, and victory—which lies around them.

A word more about the state of truce which, as I said, exists in the upper regions of educated life. That truce is not altogether a happy one. It is not a truce of men who, standing face to face, have grasped each other's hands. It is much more truly a truce of men who, despairing of one another as unreasonable, have turned their backs upon those who disagree with them; who feel that there is no possibility of coming to terms with certain other forms of thought, and are going forward with their own work. Even such a truce for separated work is far better than standing still in perpetual debate, but it is not quite a

A truce by estrangement.

happy state of things ; and it lays the foundation, quite possibly, for terrible disappointments later on.

For a practical purpose it may be worth while to consider some of its features. In the first place we may turn to the religious side ; and indeed with the religious side we may group, to a very large extent, in this affair, the side of general culture, literature, and poetry. It is not only the religious men, it is not only the theologians, who are inclined to despair of naturalism. It is the cultured people, the poets, the historians, the literary men. Men drawn from all these ranks feel that its recent extraordinary assurance has put naturalism out of court. They say to themselves, "Whatever is true, certainly conclusions like those which were pressed upon us between 1870 and 1880 are not true." And why? Because not only do they conflict with certain *developements* of religious thought ; but if they are of any strength at all, if they are to obtain any kind of victory, they are bound to exclude the very *minimum* of a free view of life. For naturalism in order to be, as a fighting force, worth its salt, in order to set out in life as a philosophical system, has to make a large postulate. It has to insist that the world which is presented to our senses is a complete and closed sphere of existence, that there are no intrusions into it ; and that, although

it contains regions not yet explored, in itself it is a whole ultimately homogeneous throughout. The foundation-axiom of natural science—and if I have time I shall show that we have no quarrel with this *as an axiom of science*—is the uniformity of nature, is the indestructibility of force, is the idea that you can never get more into the world than there was always in it. The world in the view of natural science—and it is perfectly just as an abstracted, special view of the world for a particular purpose—the naturalist view of the world is that it consists of a certain fixed quantity of matter and of force and of reality ; it is a self-closed sphere. Such a view not only excludes our conception of heaven, judgement, resurrection, or some particular interpretation of the miracles in the Gospels, but it also excludes any conception whatever of moral freedom as such. It is impossible to insert into a truly consistent naturalist view of existence anything which can properly be called a belief in freedom. Such a belief would upset the whole conception. Men are therefore now able to see that they will have to pay much more for an *exclusively* scientific point of view, for a peace in that sense with science, than they ever intended to pay. And although certain statements of religion are beset with many difficulties and much uncertainty, yet men will not contemplate the purchase of peace with science by the dogmatic

denial of these statements altogether. The price is too high. But no lower price will serve ; for pure and exclusive naturalism breaks down entirely as a philosophical view, as a conception of the world, as soon as you have the smallest hint of a doubt whether the world in itself is a complete closed sphere—as soon as you have an inkling of a question whether there may not be, perhaps, more in God than there is in the world which He made. We must, for a naturalistic peace, give up such questionings ; and very few people of ordinary culture, very few men who know much about their own hearts, very few of those who are led to consider the mystery of human will, the extraordinary reality of the joys of virtue—few artists, few among those who write plays, who know the absorbing interest of moral problems and who see that morality cannot retain any genuine interest on a strictly mechanical view of existence—few human beings in whom human nature is quick and articulate, are now willing to close with the naturalist view as a consistent philosophy. There has been, therefore, some tendency to estrangement between naturalism and culture in general.

And in particular the *religious* men know that they are engaged in a great work, like that old hero of the Bible who refused to come down to speak with Sanballat and his friends because he was building the city of God. In the same way a man

who has any religious experience at all, who knows anything of the movement of prayer, who knows the agonies of repentance, who knows the strife of self-improvement, who knows the attraction of the Lord—such a man as this is sure that he is surrounded by the realities of a great life. He says, "I am about a great work and I cannot come down. While you asked me to believe that this or that phrase in the Bible was not true, I might in a desire to justify my trust in the Bible turn to answer you. But it appears now that nothing of this kind will satisfy you. Your system, as a system, is an impossible one, whether its conclusion be what is called naturalism—that is to say, the dogmatic assertion that the world is an independent reality complete in itself—or whether the conclusion be what is called agnosticism, namely, the dogmatic assertion that we cannot know otherwise." For agnosticism is not merely a new name for scepticism ; it is the positive and dogmatic *assertion* that we cannot know. Whichever of these two conclusions be the one towards which the naturalist system of philosophy moves, it is one which the religious man can rule out for certain at the outset ; and he therefore says, "It is waste of time for me to bargain with you about this or that concession, because I know that, on the whole, you have taken up a position which for me is an impossible one." The religious man, therefore,

turns away in despair from studies which, pretending to sketch out for us a plan of the universe, land us in a scheme which excludes the greater part of human consciousness.

On the other hand, the naturalist—by which in this connexion we do not mean the student of the forms and ways of animals and plants, but the upholder of a special scheme of philosophy which is supposed to have the particular authority of natural science at its back—looks upon certain developements of religious life which he thinks, and perhaps justly, to be unreasonable ; he sees this or that special statement which has been drawn out of ancient creeds ; and he is struck by one or another dogmatic assertion which he finds to be quite out of tune with his own knowledge of what the world really is : or he comes across that stranger perversion of the believing temper which is content to be ignorant about the world in which we live, the temper in which men seem to think that the interest of religion is the opposite of the interest of science, that its security depends upon seeing how many difficulties and how many discrepancies there are in natural science. This disgusts and chills the naturalist, and he says, "If the spirit of faith produces this credulity, or if the spirit of faith produces this intolerance and this obscurantism—this preference for darkness over light—then, judging of its nature by its

fruits, I will have nothing to do, at any rate, with any *organized* community of effort with regard to faith. I will draw back from any self-committal to these inward stirrings of my nature lest they land me in an irrational position."

The religious man, I say, sees his *minimum* just as much required from him as his *maximum*, and therefore withholds his assent altogether from naturalist teaching. The other man fixes his eye chiefly upon the *maximum* or upon the special developements of religious practice, and in recoil from these he may desert all creeds, even that of naturalism, and fall back upon what is, after all, very comforting and easy—the position that we do not know anything beyond our own immediate circle, and that we had better occupy ourselves between the cradle and the grave in investigating the threads of knowledge that lie near to us, and in trying to improve the practice of mankind, not for long and distant issues, but for the increase of comfort and of health and of security of movement.

What is needed for a better understanding.

Now, what do we need in order to remedy this disease of estrangement? The estrangement is very dangerous. In the state of estrangement we push forward on our separate lines to very remote and complicated developements. And when once sceptical thought, tired of literary studies, turns

again to occupy the ground of attack afforded by natural history, it will come upon a Church more than ever unprepared, and it will speak in a language more than ever unintelligible to us ; so that we shall be thrown again into one of those unreasoning panics which must always take place from time to time in a Church which does not regard its position in a physical world as a serious thing, a serious part of the truth of God ; which turns away from what is really discovered about this world as if it were of no consequence.

In order to avoid the recurrence of disturbances, two preparations seem necessary. First, I think we must pay a more serious regard to the study of physical facts and of our own position in the scale of physical being, and we must endeavour to learn what that position really is ; but the endeavour must be made with the caution which refuses all decisive conclusions upon premisses which are of necessity incomplete. Truth, *of this kind*, at any rate, will not be reached *per saltum*, by leaps and bounds. And on the other hand it is necessary—but here I touch what lies apart from our work to-day—to plant our faith upon its own proper foundations. The security of that faith must not rest upon our ability to come to terms with this or the other assertion with regard to the outward frame of things. Such

a method will always lead us into alternations of unjustified confidence and causeless fear. Knowing in ourselves that religious certainty cannot be obtained by looking simply on the world without, we must be diligent in making our way clear to the real sources of conviction, to those things which can alone bring verification to the hypothesis of faith, which can alone justify the enterprise, the experiment, which faith is—namely, the experiences of grace. It is these alone which can ever bring to a conclusion the argument of faith. We need, that is to say, on our own side what I shall venture to call a truly scientific spirit.

Presently we may consider this spirit at more leisure; but before doing so, let me say a word about what I think is needed also on the other side. We must say 'needed' rather than 'wanting'; for indeed this need of science is answered by a gift which in many quarters grows apace. That gift is a cautious, a reverent spirit in science. I spoke of it just now; it is a sense of the mystery of things. And, to speak in terms of mere thought and argument, it is the recognition that in order for science to make any solid progress it is obliged to limit itself. It must always be an *abstracted* effort of thought. Sometimes Christian controversialists complain of science because of its narrow outlook. But this surely

In science a cautious temper.

is a mistake. It is the very condition of science to have a narrow outlook. Limitation is its charter. It is the only way in which it does practical work. It can never make any progress except by fundamental, axiomatic limitations and by the exclusion of inappropriate methods. Chemistry, in order to advance, must exclude all question of the vegetable origin, for example, of certain productions. It distinguishes them as vegetable in nature, but it does not concern itself with the process of vegetable *growth*. It looks upon a vegetable alkaloid as a thing which is to be the subject only of a particular kind of inquiry—namely, that of chemical analysis. And in the same way you may go through the whole series of the sciences, and show how each one of them has its solidity and worth and success only by way of turning away its eyes, with respect to the object which it investigates, from all but a special class of the attributes of that object.

Science is necessarily a limited process, having abstraction for its basis. This is, in the first place, evidently true of any particular discipline in science. For example, the chemist is not concerned, except for identification, with the delightful glow and colour of the solutions he investigates; the glow and the colour, which are the very qualities in them

And a recognition of its own special foundation.

which would interest a painter. But further, as each particular discipline in science has abstraction, limitation, selection of effort, as the foundation of its success, so it is with regard to the whole activity which we describe in general as science, the effort to arrive at truth by the collection and arrangement of a number of particular facts secured to us by the action of the senses. This also, which is science in its broadest expression, has abstraction, limitation, for its charter and for its character ; and here is no matter of reproach. It is absurd to complain of science because it does not include those fields of thought of which I spoke just now. There could be no natural science at all unless we regarded the world as a uniform system of sequences from which nothing could ever really be taken, and to which nothing could ever eventually be added—growth being always the unfolding of stuff and force which are already present in the undeveloped. But we must *recognize* our process of abstraction. And, while it is absurd for those who differ from us to complain of our abstraction, we who care for science must on our own part, when we have made the abstraction, take note of it and allow for it. If we omit this recognition, this discounting calculation, we fall into error. We make certain limitations in order to arrive at conclusions. Then we take those conclusions away from the special thought-conditions in

which they are true, and propose that they shall be held valid beyond that very barrier which we built up in order that we might manufacture them. We cannot manufacture our conclusions except inside the precise barrier that we have made. But the conclusions once obtained, we go outside our barrier and offer them in the market, or push them, it may rather be said, down men's throats, in a region which is plainly outside those very artificially limited lines, the creation of which and the agreement upon which was the first necessity in order that science might make its initial step.[1]

Perhaps this *intellectual* recognition of the limits of method is equivalent, or at least something closely parallel, to the characteristic of *temper* of which we already spoke. In terms of temper, what we desire is reverence, caution, kindness, toleration, patience, and these good things we thankfully acknowledge to be daily growing, at least on the scientific or naturalist side of any line of division we could draw.

And side by side with this—perhaps, as I have said, the very same thing described as a characteristic of *thought*—there is the growing recognition (for it does grow) of that which long ago was perpetually urged by preachers and philosophers ; for example, by Canon Holland, who eloquently

[1] See Appendix, p. 279.

invited men to see this truth twenty years ago. What was then urged by theologians now gains acceptance in the minds of persons who are interested in natural science, as appears, for instance, in a book which many of us have seen, Mr. Wells' *Anticipations*, which, although a popular book, is based upon exact knowledge and written by a man of something like genius. Mr. Wells anticipates that science will be recognized as an abstract, specially but legitimately manufactured, a view of life deliberately limited ; and that side by side with it men will continue to cherish what may be described, perhaps, as the practical, general *primâ facie* view of life. For we are coming to see again the value, the lawfulness, and the authenticity of the *primâ facie* view of life. We are not so readily frightened as we were out of what we know naturally — the general effect which the world of experience has upon us—by the name of some minute and abstruse analysis of the machinery which lies behind that great effect. The same truth has been urged upon us by Mr. Haldane in his book *The Pathway to Reality*. But Mr. Haldane is a metaphysician, and in metaphysics the obvious has always been respected. The happy change which we note is that the philosophic temper, with its regard for ordinary experience, is becoming characteristic of those who are specially devoted to the technical analysis of

nature ; that the followers of natural science are more and more free from naturalism.

We turn to the side of tradition, of faith, of religion. If in science we need, and welcome, a spirit and a method of patience ; on the side of religion we need and ought to show a more truly scientific temper.

In religion a scientific spirit.

And now, although I have already kept you longer than I ought, and longer than I shall again, I will venture to say one or two words about the scientific temper in religion ; and briefly, because we may return to this subject another time.

This temper will not be simply a respect towards natural science on the part of religious people, though this also ought to grow. It will not be simply an anxiety to bring our truths, the things which maintain our life, into actual tune with the discoveries of the world outside. We shall be patient about that. We shall come to know—we ought to know if we think the matter over—that there is a necessary want of continuity, an inevitable gap ; that there must be an interval when two kinds of knowledge which are *both of them growing*, exist in the same mind, or in the same world of minds. If both science and religion had reached home they ought to come home to one point. But *ex hypothesi* neither of them has so reached home. They are both of them

growing, both of them developing, both of them learning, one of them confessedly growing rapidly, and casting behind it every ten years conclusions which were thought to be certain. Both are imperfect, though they grow. Both are far from their end, though they advance. That is to say, they are forms of knowledge which we cannot expect to find in complete accord. But we must say more than this.

Not only may we be well content when we find them still out of tune with one another; but we ought to be positively alarmed at any appearance of unbroken agreement between them. If what professed to be science coincided along the whole line with what professed to be religion, we ought to be sure either that what we had hold of as a science was not really science, or that what we had hold of as religion was not really religion. It is, on general grounds, impossible for two kinds of knowledge, both of which are in the course of growing, to be at any moment of their growth coincident along a line at more than scattered points in an individual consciousness, or in a world of minds, which is the subject or which is the acquirer of the two kinds of knowledge. I venture to beg you to think of this very carefully. I submit that when we find discrepancies between that which we learn from the Bible and our own souls, and that which we

learn from the microscope or from speculation, we ought not to consider such a discovery a cause for lamentation ; on the contrary, it gives what is essentially needed for our reassurance that we have hold of real clues. The religion that was nothing but a system in tune with science would be no religion ; and the science that was nothing but a system in tune with religion would be no science. In either case we should be listening to an echo. The so-called religion would be only an abstract of natural knowledge, possibly "warmed by emotion." And the science would be a mere republication in another voice of some story imposed upon mankind by ecclesiastical authority.

What is true of coincidence is true also, with a difference, of continuity. A want of continuity between the different parts of our knowledge seems to be a necessary accompaniment of all developement of intellectual life. And we must be patient under it, and we must not take it to be itself any sign that either part is untrue. Their want of continuity, of course, will not by itself show them to be true ; but it will not by itself show them to be false. On the contrary—and this is the point —if we have, in two sections of inquiry, sound and honest reason to suppose that, without being infallible, we are yet finding our way according to some genuine correspondence with the facts, then the failure to see the two lines of knowledge

drawn close together and buckled to a circle, so far from giving us alarm, will be recognized as the necessary result of the coexistence of two real forms of knowledge in a growing state within a single consciousness.

By the religious scientific spirit, then, the spirit of science in religion, I do not mean just now the spirit of profound respect for those wonderful studies which science specially presses on for the benefit of us all; nor, secondly, do I mean by it the fretful and anxious desire to translate the divine facts of salvation into terms, say, of psychology; nor yet a fear and distress because there are some things belonging to belief and which we find ourselves believing, but of which, nevertheless, science can give no account. In this matter, I may interject, there is a curious want of consistency. Formerly we used to disparage religion if science was able to account for it. Nowadays we disparage religion because science is unable to account for it. It seems to me that we cannot have the advantage of both of these positions, and I submit, for my part, that the failure of explanation should not tell either against science or against religion, and that we must be content with a want of continuity in the knowledge that we really possess.

We are quite content with such a want of continuity between the different parts of our *natural*

knowledge. For example, in a perfect scheme of science we should like to see the study of masses, weights, and dimensions, and then the study of movements ranged in order, so as to become the basis without any gap for further studies upon the interior molecular movements within bodies which in the view of mechanics are considered as wholes, and without reference to any changes within them. We should like to see the mechanical investigation of masses going up without any break, until it could become the mathematics of interior molecular vibration. We should like, that is, to see all these movements which are at the root of chemical attraction, of light, heat, electricity, and Hertzian vibration, ranged in a steady line from the bottom to the top, and capable always of being related to the larger movements of sensible masses. Further, we should like to see the intimate knowledge of the vibration of substances within themselves, and those investigations which are directed towards the discovery of the ultimate constitution of matter linked on, either through chemistry or some other study, to the lower margin, the basis, the initial axioms of physiology. We should like to explain the action of cells, the action of the bodily fluids, the action of nerves in terms of chemistry and physics.

And if we were impatient of all discontinuity we should refuse to begin our physiology till we

had finished our mechanical studies. Is this the course actually followed? Everybody knows with what astonishing rapidity those studies of molecular movement have advanced during quite recent years. And remember, the very rapidity of their advance, with the enormous change that has quite lately taken place in our whole conception of them, shows that they are capable of immense further advances. When a thing is motionless we can suppose it to be permanently motionless. But when we see it in motion we cannot tell how far it will go. For all that extraordinary advance, everybody knows that there is a gap entirely unbridged between the utmost speculations and the ultimate conclusions of molecular physics, and the most rudimentary foundations of physiological science. Do men put off proceeding with their physiology till they have made the junction? They have secure hold of some certainties with regard to life, and, therefore, although they cannot explain what life is in itself, they push on with an amazing rapidity and success and with astonishing earnestness and devotion in their studies of the *behaviour* of life. It would not be difficult to mention, if it were proper, certain instances of an activity which puts ours in the world to shame. For, in fact, science is a kind of Church pressing on with rare diligence and devotion and earnestness and with amazing success

along its path of discovery. But it does all this in spite of the fact that large portions of its knowledge lie scattered like the unshaped timbers of a forest under the axe, not fastened each to each to form a structure. The facts won with so much effort may have no term in common except such bare axioms as this—that what is real is real, that the world indeed exists, that law is uniform. Even the conception of cause has now for a long time been upon its trial. Many speak only of sequences. Things happen one after another ; that is matter of observation. But the notion that one makes the other happen is not in all quarters now held to be one to which science may be committed.

And, notwithstanding all this want of continuity, see how real is the advance of knowledge. It marches in spite of all drawbacks. And the unmistakable reality, the vital importance of its march, is a full answer to all speculative difficulties, *in so far as* these difficulties are proposed as detracting from the validity and the *essential* justice of scientific inquiry. . . .

To-day we have spent time over questions which are thought to be apart from religion. Some day we ought to consider the clearly religious side of life, to speak about other discoveries, other realities, other trials, and another call to earnestness, and so in part redress the balance. Meanwhile the analogy of the different and discrepant

branches of natural knowledge supports what has been said of the wider discrepancy between faith and natural knowledge as a whole. We have hold—we cannot tell how—of two bands of knowledge not different in essential nature so far as each is *real;* but different in many respects and especially in the direction in which we seem to find them. They are strong bands; and the fact that they do not wholly meet, but show an interval which we call disagreement, is not *of itself* a reason for distrusting either part of our knowledge. We ought, if our vocation is to the special study of nature, to work hard at this study. With a higher obligation still, we ought—and it is the vocation of every man—to see that, by the grace of God, we are gathering the facts and pushing on with the industry, which will enable each man to build up in himself a great structure of practical certainty with regard to the things of the soul, and of eternity, and of God.

II

THE SCIENTIFIC TEMPER IN RELIGION

Recapitulation—The scientific spirit in religion—A scientific age—The subject resumed: psychical research—Fluctuations in scientific opinion—The adventure of science: I. In speculation. Theory and verification. II. Adventure in actual discovery. III. Adventure in the ordinary discipline of science—Authority and personal assurance—The parallel state in religion—The place which belongs to action.

"We glory in tribulations also: knowing that tribulation worketh patience; and patience, experience; and experience, hope; and hope maketh not ashamed; because the love of God is shed abroad in our hearts by the Holy Ghost which is given unto us."—ROM. v. 3–5.

I READ these words as representative of what I have been accustomed in my own mind to call the scientific spirit in religion.

Before we resume the course of thought begun last Sunday, I have two remarks to make. First, I have received some advice which is very valuable, and which I hope to be able to act upon later. But we must at present follow the thought that we touched last Sunday; and even if it happens that we do not during Lent arrive at any of those particular difficulties which reach us from the scientific

world of thought, yet we shall be doing here what is absolutely necessary as a preparation for any wise thought about particulars, and, moreover, a work worth doing for its own sake.

The second thing that I wish to say is that we are dealing with a very large range of subjects, and in consequence every word spoken suggests a fresh train of thought and illustration which one would like to enter upon. The task of selection is difficult, and it is necessary to put a curb upon one's tongue. Therefore, I will beg you to consider that silence does not imply a disregard of the things about which one is silent. We have to make sure of touching some things which, to me at any rate, appear specially important, but by directing attention upon these things we do not in the smallest degree imply that the multitude of other things which remain unsaid are unimportant or untrue. For example, the criticism of materialism as such on purely philosophical grounds is a work which is probably by far the most important of all works of the mere intelligence, and the most important intellectual safeguard and support which the Christian possesses. When we do not touch upon it, or when we dismiss it in order to arrive, by contrast with it, at the description of another method of strengthening our faith, it is not implied that in the view taken of the world of thought, that criticism is in itself either unimportant or unsuccessful.

Next, let us briefly recapitulate what was said last Sunday. We said that there was a measure of estrangement between some of those who are specially attached to the study of nature, and some of those who are attached to and who are pressing on in the Christian life. Here is certainly one of the incomplete statements of which I spoke. We are never left without men of large minds and large characters who show in their own persons the abolition of these estrangements. And, indeed, the most important of all reconciliations between divergent forms of thought is that which is found in great personalities, in minds, in lives, strong enough to draw together and focus into one view, sources of knowledge which, to most of us, seem so far scattered that we can only look at one or other source at a time. These men prove by an unfaltering confidence that they have somehow in their own lives, although we are not always able to trace the process, made a synthesis, a combination of the different kinds of teaching which God gives us. I will mention only two names, the name of Sir Gabriel Stokes and the name of Cayley, the greatest mathematician of the last century; and I will only add that a glance at the calendar of the University of Cambridge will be sufficient to show that these names by no means stand alone.

Recapitulation.

We went on to say that in this condition of

estrangement, in order that we may draw more closely to one another, what is needed is on the side of naturalism a spirit, a growing spirit, of reverence, of caution. And the same thing expressed in another set of terms, expressed as a habit of thought, is, we said, the recognition on the part of those who cultivate natural knowledge that their knowledge is arrived at by a method which is of necessity a method of abstraction and limitation. So that it must always be a special result at which they arrive, and in dealing with that result they must remember the conditions by which it was procured. On the other hand, we need in religion the growth of a spirit which I called the scientific spirit, and I was proceeding to an attempt to illustrate or to define more exactly what we may fairly mean by those words.

The scientific spirit in religion.

And first we said we do not just now mean by them that which is, in itself, so valuable—a greater respect in the minds of believing persons for the labours, the methods, and the results of natural science. This is, indeed, very much to be desired on many grounds; not only on the general ground that charity requires all men to respect each other's activities in the world of God, but also for particular reasons.

And it is a fact, a very strange fact, that although we are living in a scientific age, anything

approaching to a knowledge not of the general principles, but of the methods and the results of any one department of science, is extremely rare among educated men. That is a bold thing to say, but it will bear examination ; and it is something more than an inevitable result of specialization. For this condition of affairs is not paralleled in other cases. There have been other ages which have had other marked characteristics. The seventeenth century was a literary age. In the seventeenth century courtiers carried Plato or Vergil in their pockets to the ante-chamber. The eighteenth century was an age of argument upon a certain level of philosophy, which now we consider to be a low level ; of an atmosphere in philosophy which we now consider to be cold. Well, in that age, the age of the Deists, and of those who resisted the contentions of Deism, all kinds of men in all kinds of places were deeply, practically interested in the arguments which went forward. This age is supposed to be a scientific age, and what we may remark as strange is that in an age which perpetually invokes the name of science, there is an astonishingly narrow extension of anything which can properly be called scientific knowledge in the classes which are supposed to be educated. I do not say this of the classes whose education has only begun. In the advanced pupils of the primary schools, in those who attend

A scientific age.

the many institutions for evening instruction, I have no doubt there is a keen interest in natural science and a very considerable knowledge. Such knowledge is extremely rare in those regions of life which we more specially call educated. I think that there are a great many who know no more of science than what is enough to excuse them from coming to church. Therefore it is indeed most desirable that there should be an extended recognition among all kinds of people and all kinds of Christians of the great and wonderful work of science; and about this I shall have something to say, if possible, later on.

Secondly, we dismiss, as not being that which satisfies for our present purpose the definition of a scientific spirit in religion, another effort which also has its merits; the effort to arrive at a detailed conciliation with the teaching of natural science, which may cover all the different parts of the statements of religion. It is far from being the case that such an effort is valueless. But it is not that which I was intending at this time by the expression "a scientific spirit." I venture to say that the truly scientific spirit in religion may be pressing forward and gaining great victories, although that work of detailed conciliation between the Bible, to take one example, and the teachings of zoology, between our traditions of the past of mankind and those scattered discoveries which are made by

anthropologists, meets for a time with great difficulties, and is often seriously set back. We showed by one example in natural science that a want of continuity between two kinds of knowledge does not by itself constitute any reason against cultivating both of them with the confidence which is proportioned not to the degree of harmony which is made evident between them, but to the relative trustworthiness, the solidity of the premisses of each.

I will add one example of the same kind, which perhaps may strike you as more interesting. The work of biology, the study of natural forms, which is nowadays, of course, a study of developement, is deeply at war, you might say, with the conclusions of astronomical discovery. It is very difficult for the astronomer and the geologist to allow to biologists nearly enough time for the processes which we conceive to have taken place in the evolution of animal forms ; and we recognize the great difficulty of this want of harmony. But there is still within biological study a sufficiency of real and solid ground ; so that, although we must all admit that there is a mistake somewhere, that mistake is much more likely to be rectified by our pressing on, each on his own side of the gap, with the special work which lies to his hand, than by any *present* attempt to reach a complete harmony. And, at any rate, that work must not

be delayed until such a complete harmony has been established between the present provisional conclusions of biology and the present conclusions reached by a larger study of the world's history. These stand for very fair examples, I think, of the truth that discontinuity of knowledge is in itself by no means a sign that either part of the knowledge is untrue. It is, perhaps—and I think most certainly—an inevitable condition of the coexistence of two strains of knowledge, both in an imperfect state, within the bounds of one consciousness.

The subject resumed—psychical research.

Now our fresh point for to-day. In the third place, I do not myself intend by a scientific spirit in religion that which nowadays would with much more confidence claim the name than the two we have already considered. I refer, of course, to those new and strange and, as they are commonly called, occult inquiries by which an endeavour is made to give a scientific basis to religious beliefs ; to find a proof according to the measures which are used in physical science for the existence of man after bodily death. I have not myself nearly sufficiently digested Mr. Myers's posthumous book to be able to express any opinion about the measure of success which his array of proofs has attained to. But whatever be the case about that, I would say that this kind of inquiry, valuable as it may

be, valuable as every inquiry into what appears to be true is valuable, is not essential at all to a scientific position for religion, and is not what we mean particularly by those words. To make religion scientific it is not necessary to be able to claim that it is a department of physical or of physiological or of psychological inquiry, that it is a department of science in the ordinary sense of the word. On the contrary, that which could be proved up to the hilt by tests, by forms of experiment which would command the assent of every sensible man, would not have the value which belongs peculiarly to religion. It would lack the claim of faith and the requirement of adventure by which religion does its work in the soul. And further, all the conclusions which can be reached or seem to be reached from time to time by such special and still strange studies will certainly share the fluctuations which belong to the conclusions of natural science itself.

They may appear certain to-day; they will appear uncertain to-morrow. They will perhaps appear certainly untrue ten years hence. I may be so fortunate as to have a scientific man in the audience; and I will venture to say one word which will be a signal to him of the direction in which my thought is at present moving—the word *phagocyte*. Twelve years ago it was thought that

Fluctuations in scientific opinion.

science had laid hold of a new and valuable conception of the manner in which disease is destroyed or prevented in the body, and the older theory, which was called the chemical theory, was almost out of court. But now—to speak of a large affair most briefly—after studies which are amazing in their delicacy and in their sureness, and which are illustrated also by singular incidents of personal generosity—for it was the leader of the opposite school who himself gave at the critical moment the advice which rendered the triumph of the present theory certain for the present—what has happened is that we have departed from what was supposed to be the new discovery of 1890 and returned with a greatly increased assurance to something like the conception which ruled before that, and which was based upon the teaching of Pasteur.[1] The matter referred to is still the subject of great difference of opinion ; but the case serves to show the fluctuations which take place in regard to what seem to be scientific certainties. And I say that if you attempt to base your religion on something which arises from the study of the supposed visitations of persons from beyond the grave, or the supposed influence of disembodied spirits upon hypnotic subjects, you will be always open to the terrible risk that some new and unconsidered thought will arise, that some fresh

[1] *St. Bartholomew's Hospital Journal.* December, 1902.

discovery will be gained, that some unsuspected power in human nature will be disclosed which will serve as an explanation for that which you took for the support of your religion *on the ground that it could not be physically explained.* Your religion will rest upon the gaps in the completeness of our physical knowledge, and whenever one of those gaps is bridged, one of the pillars of your chapel of devotion will be undermined. Religion must take account of facts acquired by these new studies as of all other facts. But it must not make of them its peculiar foundation and warrant.

None of those three things, therefore, either—

(1) The general respect which we ought to have for other men's knowledge ; or

(2) The effort to find a detailed conciliation between the statements of religion and the statements of science, like that, for instance, which Mr. Wallace has lately put before us ; or

The adventure of science :

(3) The attempt to make a department of scientific facts which shall be by themselves the foundation of religious faith ;—

will satisfy the definition of a scientific spirit in religion. What we need is not to make of our religion a department of natural history, but to follow in it that which is good in the spirit of science ; to have what science has at its best, a wide outlook upon all the facts ; to have what

science has, a generous willingness to adventure into regions yet unknown; to have what science has, a contented spirit under the scorn which comes both upon science and upon religion from the region of merely critical thought; to cultivate, that is to say, what is fine in science—the positive temper.

And here I would interject the remark that it would be far better for us to divide our mental activities into the positive and the critical temper than to divide them, as we do now, into reason and faith. There is not in the Bible ever any contrast between reason and faith. In the Bible faith is contrasted never with reason, but always with sight; that is to say, with sense-apprehensions. In point of fact, faith is a kind of knowledge, and not only so, but it is the model and type of all sure knowledge. What it is contrasted with is not knowledge, but the critical temper; and the critical temper is also in a sense a branch of knowledge, a part of the effort of the same reason, but it is a balancing effort. The reason of man goes forward in some such manner as this. First it reaches after positive gains. It seizes hold of what seem to be certain intuitions. It grasps these as direct additions to its store. And then there comes an answering temper—a temper of criticism, a temper of doubt; and it is by the interaction of the positive, grasping,

adventurous, covetous spirit, of the *acquiring* reason, with the critical, doubting, examining spirit, the *judging* reason, that sure advances are made in human knowledge. Now, science is on the side of the positive adventure, and religion also is on the side of the positive adventure. Religion also must have its criticism, but its sympathy is mainly with the positive adventure of science.

Let me say a word or two more about this adventurous spirit in science, which is exactly what we need in religion. You may think that I refer most especially to the speculations of science; and indeed the word which I have used applies most directly to that particular part of its work. It is indeed very amazing, the speculative activity of science. Many of the greatest changes in our conception of the world have taken place, not after the accumulation of vast masses of fact; they have not arisen by adding up a long account to arrive at a certain total; but they have sprung up almost fully made in minds specially enlightened, specially in tune with the realities of the physical world. There has been something almost of inspiration. There has been, at any rate, a kind of intuition. So, for example, long before men could conceive any method by which evolution might have taken place, long before there was anything which could be called, however roughly, a proof of it—we have

I.—In Speculation.

still no proof in the exact sense, but long before there was anything of the kind,—the dream haunted the imagination of science. It was there from the long past—from the days at least of Greece and Aristotle, and probably as long as men have been upon the earth. Then came the time when in Darwin and Wallace, side by side and independently, a brilliant conception sprang up, the conception of Natural Selection.[1] These men, although they were giants of research, although they accumulated great masses of minute fact, nevertheless had not arrived at anything approaching to a conclusion. A brilliant thought was awakened in their minds simultaneously, and then, being produced, being launched as a speculation almost in the air, was verified—how? It is not indeed verified, but it advances in the direction of verification by the circumstance that it has been found capable of co-ordinating, of giving a meaning to, vast multitudes of facts, some of which were known before, and some of which have been drawn out of their hiding-places by the exertions of persons like F. Müller, who spent their lives in finding what he called Facts for Darwin.[2] It is

[1] Spencer preceded Darwin and Wallace in reviving the doctrine of *Evolution*. But the Conception of Natural Selection or Survival of the Fittest in the struggle for existence belongs to Darwin and Wallace. Indeed, it is possible to doubt whether Spencer ever fully appreciated its value.

[2] F. Müller, *Für Darwin*.

a perfectly legitimate process. A man starts with hardly more than a vision of a conceivable method ; and then, as he uses this method in his study of the world, fact after fact strikes him which before was unperceived, undoubtedly to the exclusion of a great number of other facts which do not illustrate his idea. Subsequently the great crowd of facts falling into place gradually fixes upon men's minds a more or less fully persuaded conviction of the truth, in main outline, of the speculation which was started.

Theory and verification.

Now, at present, within the schools of natural science, there is a feeling that speculation has run riot, that we have been too long engaged in spinning out to ever finer details of conclusion the thread, so to speak, of the new ideas of the last century. There is much complaint that we continue branching and rebranching our hypotheses and drawing from them more remote conclusions, until at last in some expressions of this temper what we have is little more than dream or poetry. And the cry is that we should return more *rapidly* to verification, that we should bring our hypotheses more *quickly* to account. Some go so far as to say that we have so starved for positive study and have been so full of imagination and speculation that the Prelate Mendel alone is fit to be named after Darwin as

one who has really added anything crucial to our knowledge of biology.

But, although within science itself there is a feeling that speculation has run riot and must be brought more exactly to book, must be more continually, or at least more frequently matched against the world which it professes to interpret, speculation is in itself a perfectly justifiable exercise of the reason, assisted by the imagination ; and by its means men often acquire solid truth, solid realities of discovery. There is something like this also in religion. We reach out after that which is not at present known to us even by revelation—there is an eager straining of the soul. Men have no right to give the name of truth to their own unverified thoughts and feelings. But if, in aiming towards that which is at present unknown, they come to tune their own hearts so that a larger measure of truth pours into them from the experience of life, then even speculation has so far its justification. The place and limits, the character and the necessary safeguards of religious speculation cannot here be described, nor the method suggested by which speculation may pass through verification into knowledge. But, at any rate, we may acknowledge that whatever else a scientific mind might find fault with in religion, it has no right at all, no shadow of right, to find fault with religion because it is adventurous,

because it strikes out into the dark, because it steps out into places where it has no footing assured beforehand.

But, in the second place, the same adventurous, experimental character belongs to all the special discoveries of science. It sometimes happens that men come actually to see with their bodily eyes what they had before divined with the scientific imagination. And so, not as in the verification of large theories, which is always a vague and uncertain verification, but in the actual verification of physical sight, when the eye of the man through the microscope rests upon the very structure which the man had conceived—in that also there is something like faith. There also the eye was, so to speak, plunged into a darkness which had not been before explored.

II.—Adventure in actual discovery.

There is a particular instrument which to my ignorance always stands as a kind of image both of this adventure of physical discovery and of some of the experiences of faith, an instrument (the ophthalmoscope) by which the retina of the eye is examined. If you look where you instinctively suppose the object to be, you see nothing but a blurred light. You have by an effort of the will, until you become practised, to focus the eye, as if in blind obedience to authority, upon a point behind and beyond the head of the person whose eye you wish to examine. You must resist the

natural inclination to look where by instinct your mind places the object, and by an effort in obedience to a type of authority, that is, to knowledge antecedently secure, you must focus your gaze beyond. But when this focusing is done, then the senses are confronted by the sight of a real object; and you actually observe that which, so to speak, you previously divined, that which you sought after in obedience.[1] Even so in religion we are obliged to seek after that which we have only heard of, and to put ourselves into a posture for receiving it which has not yet been justified by any experience—to throw ourselves into an attitude of mind which is prescribed for us by an authority coming down from God. But when that is done, there comes a personal security and an absolute fitting together of the consciousness

[1] The teaching which indicates beforehand the direction in which a result is to be looked for (and found or missed) must not be confounded with the artificial simulation of results in order to encourage inquiry. Both in natural and in spiritual science the real experimental method, the lawful marriage of authority or instruction with personal effort and personal verification, is discredited by the existence of a parody. Lecturers, giving Foucault's pendulum demonstration of the earth's rotation, or the classical experiments to show virtual velocities, are said to have made their instruments move as they ought to move according to theory—to encourage students. So I learn from one of Mr. Wells's characters, a detected spiritualist-cheat, who defends by this example his own provision of sham 'supernatural phenomena,' which may induce (as Browning's Sludge pleads) real manifestations. This interference with results for 'edification' is not parallel but contrary to the real experimental method.

which is capable of receiving Divine instruction with the Divine instruction which is ready to be poured into it. There, again, in the actual adventurousness which belongs to common observation —which belongs much more strikingly, of course, to special and new discoveries, but which results, not in a theoretical degree of certainty, but in absolute physical proof—you have something like the adventurous spirit which is so often complained of in faith. Very often one is obliged to say to those who wish for certainty that they must act in order that they may know; that they must do the Will of God in order that they may grow in conviction; that they can never know first and then act, but that their certainty will come in the course of prolonged obedience. They say, "You are inviting me to take a leap in the dark." The same plea would hold good for an inquirer in natural knowledge. The same plea would most certainly hold good on the lips of a student who should approach the schools of anatomy or physiology. It is not untrue to say that before he can know anything he is invited first to make a leap in the dark.

III.—Adventure in the ordinary discipline of science.

And so, in the third place, I would speak of that discipline of teaching by which, in point of fact, men are trained to become the discoverers whom we reverence.

A man comes to begin the study of nature, to have his first introduction into

some branch of physical science. Does he know beforehand what he is going to learn? Has he beforehand any ground for security that the methods which are to be used are just, except the security of authority? Let us suppose an undergraduate at Oxford halting on the steps of our museum and refusing to enter and put himself under any discipline until he is sure that there is such a study as physiology, that its conclusions are relatively certain, that it is based upon the contemplation of real laws of nature. Might he not say something like this?—"There has been much difference of opinion on these subjects. Many things formerly believed are believed no longer. I am inclined myself to think that it is all unsusceptible of real proof. I am an agnostic with regard to physiology." Were he to halt outside until he had made sure, could he ever enter? Is he not obliged to enter with the spirit of faith, with tremendous presuppositions; first presupposing that there is real fact to be discovered, and secondly that those who teach have hold of a method which, though imperfect, is in a measure sure and continually rewarded with fresh results? Must he not go in with those presuppositions and put himself in the hands of men who at first will show him none of the things that he desires to know? He is, let us say, a medical student. He sees nothing at first which seems to have a

direct, scarcely even a remote, bearing on medicine. It is by simple, almost mechanical work, by all sorts of ordinary training, that the man has to be brought into some degree of discipline before curiosity receives any satisfaction. There is a great exercise of faith to be made. But the student does not perceive discomfort in this exercise of faith, because all round him are people who thoroughly believe in the reality of physical science. And, besides, there is a part of his own being which belongs to the subject-matter of the science. He carries about his own body as an ever-present example and evidence of the reality of the subject. Now, if we also walked as we ought to walk, in the full exercise of our other powers, if our spirits which have been made alive in Christ continued alive in prayer, if we exercised and energised and worked with those faculties which God has planted within us for everlasting life, if we were sweating in the business of virtue, then we should be conscious— as every man is conscious of his body so we should be conscious also — of our spiritual being. We should not be cast back when we draw near to religion by the demand for a self-committal which is not at first, or at any rate not beforehand, justified, but which goes forward to a ground where it shall be rewarded with certainty.

Notice this in the discipline of natural science. It begins and it continually proceeds by the exercise of authority and the willingness of obedience. Step after step this authority justifies itself. This obedience is rewarded by a personal apprehension of that which was spoken of. I myself was instructed—or I ought rather to say entered to the science which I have not pursued—by a great teacher of morphology, Professor Moseley, who had perhaps this as his leading characteristic—that whatever he spoke of, whatever he taught, he would not on any account allow one man in his whole class to suppose himself to be certain of any point, however minute, however large, however rarely seen, or however commonly known, which he had not seen and verified with his own eyes. We were forced, sometimes against our will, sometimes grumbling as at an unnecessary discipline, to make sure of facts which we were perfectly ready to take on trust—some of them well-known facts, not very easy to bring to book and to demonstrate, like the presence of cellulose in the outer coat of Salpidæ. These are worrying, troublesome things which some students are quite willing to take out of the books. It was Professor Moseley's characteristic to insist upon personal investigation. We learned, indeed, under his *authority*. He told us things that we had never heard before;

Authority and personal assurance.

we had to yield our minds to his guidance, and so it is always in positive instruction. But the mind once yielded is set upon the track by which it can itself receive by its own senses its own certain and immediate assurance.

So it is to be in the conflict and in the labour of faith. We put ourselves in the school of Christ Who knoweth the Father. We lay ourselves alongside not only of the vast multitude who now find freedom and joy and strength under His discipline, but of the unnumbered multitudes of the generations before. We put ourselves in the great Church under His hand. But our confidence, although it marches in battalions and armies, is to be individual in its reward ; and the man who, putting himself under the guidance and discipline of Christ, looking up for His Holy Spirit, reading and studying in the Bible the ancient records of the body to which he belongs, will find something which is not ancient and remote, not literary, not historical only, not merely corporate ; for in his obedience he will march to an individual satisfaction. Placing himself antecedently under the command of One Who knows, Whom he believes to know although he cannot prove that He knows, he shall become convinced of the knowledge of his Teacher by the fact that it is communicated to himself.

This is the spirit, as I conceive, of science in

religion ; a spirit which is content in long patience to gather together the scattered proofs ; a spirit eager in adventures which are, step by step, justified by the certainties of yesterday in making ever fresh plunges into regions beyond our present vision ; a spirit whose servants put themselves under the guidance of those who seem to know, and, guided by them, guided by Him—for there is but One Who knows of Himself—themselves receive freedom in the eternal world, and find their own certainties in their own experience. They have a security which, though it be individual in its nearness and intimacy, is in its substance and in its interests bound up with the great truth which governs the whole body into which they have been brought.

The parallel state in religion.

And, finally, even as science justifies itself by the accumulation of fresh truth through the attractive force of a new thought, even as science justifies itself by perpetual arrivals in its repeated adventures—arrivals which become in turn the basis for new enterprises of risk—so most expressly science justifies itself by its power of *action*, by its power of influencing the world, the very world towards which it is aimed as an interpretation. That is the supreme verification. If a man deep in an early study of idealist philosophy

The place which belongs to action.

should find himself in the not uncommon state of doubting the reality of the external world, I would point him, not, as Johnson did, to a stone and the kick it gets, but to an achievement of engineering like the great bridge across the Forth. There you see the reason of man in practical alliance with the laws of matter. When you read Professor Ward's great book, *Agnosticism and Naturalism*, you may rise from that study, especially if, with me, you are no mathematician, under the impression that the whole theoretical basis of the science of physics has been swept away. But presently you say to yourself, "Although the science of physics knows nothing of absolute time, although it makes many hasty identifications between its own rough discoveries and the ultimate and absolute truths of mathemathics, nevertheless it is sufficiently true to be able to throw iron together in vast masses, to cast out its venturous immense pair of cantilevers across a flood of water to arrive at the other side. The physicists have their laws; they have their formulæ; they have their equations, which, though they be far from the mathematical truth, are closely enough in tune with the world of actuality to span the gulfs and to carry human life from shore to shore." It is the power of action in science which shows that, however justly criticism may discount its claim to absolute

certainty, there is a practical certainty within it, and also a real though undefined relation to the fundamental truth itself.

And so it is with religion. There is no end to the thoughts by which we may challenge the reality of its premisses. But all these are answered by the man who looks out not only into the world of history, though that is rich in proofs, but into the great world of moral and spiritual experience, and finds that those presuppositions which he has trusted bring him daily into a closer and richer intercourse with larger multitudes of souls, rob him of no entrance into other kinds of knowledge, never obscure for him the teachings of history and of science ; and give him what is much more important still as a proof, the power and the impulse and the practical knowledge himself to act upon that scene from which, by our virtue and by our obedience, we are to extract the affirmation of faith.

For, indeed, faith is not a crop which springs out of the world to reward a careless harvester ; it is rather the work of a soul which, out of a world which would otherwise seem dead, extracts the answer of confidence in God. Did I speak of the world as if it were empty of meaning ? It is alive with meaning, filled with a voice of God. But it is the voice rather of God's question to us

than of His answer. It challenges, it provokes the response of faith, and the dark places, the breaks—

> "What if the breaks themselves should prove at last
> The most consummate of contrivances
> To train a man's eye, teach him what is faith?
> And so we stumble at truth's very test."[1]

[1] Robert Browning, *Bishop Blougram's Apology*.

III

THE DISTRIBUTION OF PROBLEMS

From a general discussion of the nature of faith and of knowledge —We turn to particular difficulties—The effect of these difficulties is cumulative and not unconfused—Often the contrasted statements of science and religion are in no real collision—Four classes of 'modern difficulties' distinguished—Materialism excluded from the present discussion—Evolution and theism —The conflict may be better stated as between theism and natural selection—The so-called deistic tone of the older teleology—Paley—A more apostolic divinity—Faith has gained by attention to modern science—Not the world observed but the observing mind was amiss—Pasteur.

"And the angel said unto me, If I had asked thee, saying, How many dwellings are there in the heart of the sea? or how many springs are there at the fountain head of the deep? or how many ways are above the firmament? or which are the outgoings of hell? or which are the paths of paradise? peradventure thou wouldest say unto me, I never went down into the deep, nor as yet into hell, neither did I ever climb up into heaven. Nevertheless now have I asked thee but only of the fire and wind, and of the day, things wherethrough thou hast passed, and without which thou canst not be, and yet hast thou given me no answer of them.

"He said, moreover, unto me, Thine own things, that are grown up with thee, canst thou not know; how then can thy vessel comprehend the way of the Most High? and how can he that is already worn out with the corrupted world understand the way of the incorruptible?"—2 Esdras iv. 7–11.

The day just passed through, the things "without which we cannot be" (Revised Version),

the "things from which we cannot be separated" (Authorized Version), the common conditions and accompaniments of life, are beyond understanding. Nay, "thine own things, that are grown up with thee, canst thou not know; how then can thy vessel comprehend the way of the Most High?" This ancient utterance, not belonging to the fully canonical Scriptures, may well stand in our own minds to express the sense of mystery in which we ought to move, we who not only cannot tell much about the outskirts of the world, the origin of the sphere in which we live, but do not so much as penetrate the mystery of the air we breathe. Till quite lately there was not a man in England or in Europe who knew why a boy's spinning-top stands up. Lord Kelvin knows now, but there are not many men who have been able to master his explanation. Living in a world of which the common motions are so mysterious, we must be cautious in drawing conclusions about great things far afield.

From a general discussion of the nature of faith and of knowledge.

Now, to-day, we are to leave—and I leave it with regret—the consideration of the nature of faith and the nature of science, in order to come to some of those special difficulties in which men are more apt to be interested. But I cannot leave the earlier consideration without two remarks to make myself safe; and first, the remark that our treatment of

We turn to particular difficulties.

the nature of faith is very incomplete. Faith resembles science in many other respects besides those that I have named, and it differs from science also in many very important respects. And the second remark is this—that what you really need, my brothers who are puzzled and distracted by what are called scientific difficulties, is precisely to attain to larger thoughts. The mischief that special theories do is that they fix your eyes upon a narrow line and rob you of the spectacle of the world. What you need is not to press on along a single line of argument, but to give yourself a month's rest and let the world—the ordinary experience of the world, not to mention the experience of grace which we might have, but the ordinary impression of the spectacle of the world—have its effect upon you. There is a young man who is almost like Romeo in his mother's description :—

> "Away from light steals home my heavy son,
> And private in his chamber pens himself,
> Shuts up his windows, locks fair daylight out
> And makes himself an artificial night :
> Black and portentous must this humour prove,
> Unless good counsel may the cause remove." [1]

[1] *Romeo and Juliet*, act i. sc. 1. It must be owned that print gives the speech to Montague, not Lady Montague. But my mistake was so natural, that it might almost suggest an emendation to the learned. The speech is a mother's speech. I would let Lord Montague begin at "Black and portentous."

The humour is portentous, not always because it leads him to important destructive conclusions with regard to the Christian faith, but because at the critical moment of his life, when he ought to be entering into his heritage of the world and of religion he is tied up by a network of narrow considerations. And this servitude, though it will not bear the wear and tear of life, though it may probably not outlast the anxieties of the first years of marriage, will nevertheless serve to tide him fatally over the critical moments of life when his soul is yet flexible and impressible; and when he emerges from his dream he will emerge from it a tired man, with very little power and force in him for the adventure to which God calls him.

I venture to remind you who are Christians of this, you whose certain faith is not by any means dependent upon the way in which our little argument may turn, and who may think that these matters of scientific debate are unimportant to believers. Remember that they may, in the light of a wider study, appear unimportant for apologetics, for the future of the Christian faith in literature or in argument. But they are not unimportant in the lives of men. You say, "God is sure to win." Yes, God is sure to win. The question is, Will He win in me, or will His victory advance and leave me behind?

Well, with that let us approach these great questions, these important difficulties which arise from modern science. I find myself here in another kind of difficulty from that which I must attempt to describe. The scientific or naturalistic attack upon religion, if we may speak of such a thing—always being careful to remember that it is not science which is interested in the attack on religion but a particular school of naturalistic thought—this attack is itself immensely confused. It is thrown upon us like a body of fighters, horse, foot, and artillery mixed together; and it is very difficult to disentangle out of the great mass of objections different points which will meet the different parts of our faith. Unbelief has what Christians have always claimed for their own position. It has a cumulative weight. It has a general and, we must confess, also a confused effect, but an effect that is very practical. Now, if we Christians have been accustomed to say that we have a right to those conclusions which arise from a general and cumulative study of facts, as well as to those which we can prove logically along separate lines, we must grant the same freedom to unbelief. And when my friend who is a materialist or who is an un-Christian evolutionist can give no clear account of his difficulty, and yet says that on the whole his religion is gone, I have no right to quarrel with

The effect of these difficulties is cumulative and not unconfused.

that attitude. But we have a right to seek to disentangle the different elements of that which disturbs him. Very often they are so entangled that they have but little effect upon Christians.

They seem to us not only inconclusive, but to be on a different plane from that of the things with which we are concerned, and therefore not to come into collision with them at all. I read in a popular book which describes the mystery of the Holy Trinity by a new name, Triplotheism, and therefore gives it somehow a lessened respect, that the myth of God has been exploded by scientific geology! You may well ask how geology comes into the same house with the idea of God our Father! I cannot, for my own part, conceive not only how a person is convinced by this thought, but how he even gets to blows with such a contention. I cannot so steer my faith as to bring it into collision with any account which men may disentangle of the mode in which the earth's crust has its present form. There is a want of coincidence in the level of the two forces, so that it is very difficult to bring them into mental opposition. But to a more refined ingenuity it seems to be possible. To me the statement I have quoted sounds very much like a play on words. It reminds me of the case of the poor man who represents to the rich man's servant that he has

Often the contrasted statements of science and religion are in no real collision.

come by appointment ; and the shrewd porter says, "This man is an impostor ; I myself saw him come by the omnibus." [1]

Very many of the contentions with which we are confronted are little more respectable than that. We say the world was made by God. You say the world was made by evolution. Is there any discrepancy in those two statements ? Do you distinguish two rooms, and say, "This room was swept with a purpose, and that room was swept with a broom" ? I have to admit that my mind is so framed that I find it immensely difficult to manage my faith, not so that it may overcome such objections, but so that it may find them formidable. The unmusical man at a concert says, "What are you crying about, with your Wagner or your Brahms ? It is only horse-hair scraping upon catgut." So it is, but the one account does not exclude the other ; *l'un n'empêche pas l'autre*. This scraping is also the outpouring of souls by a method of communication finer and rarer than speech, so that a power which lies hidden in the artist and which he could never otherwise

[1] It may be gravely objected that this and like sayings are mere tricks of speech, founded on an admitted ambiguity of prepositions, and intended to win a smile. I quite agree. It is only a joke : but it is the very joke which is offered to us as a philosophy. And I wish that the humorous quality might be recognized in certain solemn arguments which depend upon exactly the same ambiguities : upon the fact, that is, that we use one language to express two kinds of relation, and that language always lags behind knowledge.

express, touches chords in the hearer which the hearer could never lay bare. But it is perfectly true at the same time that the whole effect is due to the friction increased by resin of little parcels of horse-hair upon strings of catgut. And the refined ingenuity, as I said, of some of our controversialists is able to bring the two kinds of statement—that which proceeds upon the lines of physical description, and that which proceeds upon the lines of spiritual and moral purpose and reality —into conflict.[1] Many of the difficulties of religion are not the difficulties of reaching a conciliation. They are the difficulties of originating debate.

Four classes of 'modern difficulties' distinguished.

Now, in the great mass, the confused array, of difficulties, I think that we are wise if we disentangle these groups. First, there are the objections which are brought to bear upon the spiritual conception of the world; that is to say, there are the contentions of materialism. Secondly, there are contentions directed against Christian truth. Thirdly, there are contentions directed against the general belief in God, against theism. And, lastly, there are contentions directed against the dignity and spiritual reality of man's own life. Or, to put them in an ascending order, there is, first, materialism; then there is the attack on the spiritual nature of man; thirdly, there is the

[1] I think I owe the violin example to the Bishop of Birmingham.

attack on the general belief in God, natural religion, theism ; and, lastly, there are the objections which are of course more serious, and which are more capable of real debate, the objections directed against the Christian dogma, positive religion, Bible religion.

There is the sense that we are real live persons. That has to be defended. There is the belief that the ultimate reality of the world is alive as we are, and is personal, is God. Thirdly, there are the special and separate and positive beliefs which we draw from the Bible, or which are part of the Christian faith.

Materialism excluded from the present discussion.

Now, the question of materialism we must leave on one side, not because it is unimportant, but because it would absorb the whole of the rest of our time during Lent. And with regard to it I will only say this word, which for practical purposes may not be worthless. For a man who is himself driving towards materialism, or who thinks that the weight of learned authority is against his spiritual faith, it is good to remember that the two names which are most freely quoted in this connexion are both of them names of men who would never tolerate being called materialists. I mean, of course, Huxley, and Mr. Spencer, whom many refer to, with an affectionate familiarity to which I am not entitled, as Herbert Spencer.

Now, Mr. Huxley in many places has said that he would on no account accept the name of a materialist; and Mr. Spencer, in his latest book, *Facts and Comments*, complains bitterly that men have tried again to fix this name upon him. At the close of a passage which I cannot quote in full, he says, Considering all the positions I have established or tried to establish, considering finally that I have taught that "force as we know it can be regarded only as a conditioned effect of the Unconditioned Cause [the Unknowable], I might" —and these are the words I beg you to notice— "I might reasonably have thought that no one would have called me a materialist."[1] This is Mr. Spencer: "I might reasonably have thought that no one would have called me a materialist." And yet a great many of his younger friends seem to be quite sure that he is one. He complains in the same passage that the excuse is put forward that perhaps his critics have not read his books. To this he replies, "I am not aware that one who condemns an author's opinions"—that is by calling him a materialist—"is excused because he does not know what those opinions are." The rebuke, intended for a Broad Church critic of

[1] The reference was to *Facts and Comments*, published 1902, in the chapter "Exaggerations and Misstatements" (p. 109). Mr. Spencer proceeds: "Still more after the elaborate analysis contained in sections 271, 272 [of 'Principles of Psychology'] showing the untenability of materialism, I should have supposed the repudiation complete."

Spencer, is worth thinking of by people on the other side as well. And, by the way, it would not be a bad rule to make for one's self, to call no philosopher by his Christian name without reading at least one of his books. We must leave aside the question of materialism.

There remains the question of attacks upon positive religion, Bible religion, dogmatic religion, historic religion ; the attack upon theism as such, the belief in God, which is the conclusion of natural religion ; and those considerations which seem to conflict with our belief in the dignity, and the permanence, and the spiritual reality of our own lives.

What is it which comes into conflict with theism, with the conclusions of natural religion, with the belief in God ? I put this to you : it is not the doctrine of evolution which comes into conflict with theism. I do not think that one could very easily frame a pair of syllogisms, a form of argument by which you could bring into opposition the conclusion of theism that there is a personal life, a spiritual unity behind the world, and the statement that the world continually changes, grows, unfolds itself as a flower does, and that it came to have its present relatively permanent form by processes comparable to those which we now see going on. That is what evolution teaches us. It is that *the*

Evolution and theism.

world came to its present form, its present relatively permanent form—for of course all things are changing—*by the action of forces not dissimilar from those which we now see operative round about us.* And, in particular, it has an important doctrine with regard to the origin of living forms, and it teaches with a high degree of certainty that the forms of animal and of vegetable life are related to one another by a law of growth ; that the higher forms have grown out of the lower state of life which is still represented amongst us by permanently lower forms. That is to say, currents in the tide of life have advanced with unequal velocity, so that there are still in its general stream representatives of the state in which life started, or something like that in which it started—namely, the unicellular animals and plants. And at the same time other forms have gone further *en échelon* till they have reached the high degree of specialization which we see in vertebrates, in mammals, and in man.

Now, has that conception anything to urge against the doctrine that there was a personal cause behind the whole process : that this cause has in Himself at least all that we have in ourselves ? Has it anything to say against the contention that the cause must at least be as large as the effect ? And, if the effect is still going on, must not the cause be larger yet and lie beyond

it? The Psalmist says, "I see that all things come to an end; but Thy Commandment is exceeding broad"—that is, extends beyond the end. It lies outside each passing thing, and when each state comes to an end the Commandment is still there. We may say the same about all we see, about the universe. It is continually coming to an end, and yet there is something which is continually the same. We may say of all the parts of that effect which we call the world, that they are continually coming to an end, but that the origin of them all is "exceeding broad"; it goes beyond them all, made what has been, makes possible what shall be.

I do not stop here to maintain what I have said, or to show cause for it. I only submit to you provisionally that there is no ground for so much as initiating a debate between the idea of evolution and the idea of God.

But with regard to Natural Selection, the case is somewhat different. Natural Selection is the suggested mode or machinery by which this changing current was guided. With regard to this, there is *primâ facie* an opportunity of conflict with the idea of God. There must be *primâ facie* such a ground, for in point of fact such ground was taken.

The conflict may be better stated as between theism and natural selection.

Let us try by the briefest possible reflexion

on the past to notice how this came to be. Briefly, it came to pass on account of the fact that in Christian minds a narrow idea of God reigned.

This idea is generally called the deistic idea, but it is not properly the deist's idea at all. The deist's idea is that God does not affect the world any more; that He is remote from it. But those Christian apologists who have fought against the deists, and of whom the most renowned is Paley, sought to show, in contradiction to this opinion that God is remote from the world, the traces of God's action in it; and in so doing their own minds became coloured by the notion in which God is represented as if He were a workman upon, or at best a workman inside, His own world. He is continually called the Artificer of the Universe, the Great Architect, and the suggestion which is raised by these words is of a wonderful Power Who, in conditions which He found established beforehand, and with material which He was able to lay hold of, set in process changes which lead towards an end which is not Himself. God is conceived of as One working upon a material world, which He has to manage as best He can.

The so-called deistic tone of the older teleology.

And there was this further weakness in the system, that the wonderful character and Divine

origin of the world were thought to be indicated, not in its general amazing unity, but in the fact that this or that part of it fitted another part of it, as if God had been in the world fitting keys to locks, rather than Himself the source of all the different sides of every reality. And so in point of fact in Paley—whom we ought all to remember with great respect, for he did good work certainly not for religion only, but for science also—there is, nevertheless, a tendency to make the most of those cases of adaptation of which no physical, mechanical account can be given.

Paley.

There is a remarkable instance, which I would not venture to recite from memory, in which he discusses the mode in which certain insects are folded up within the shell of the egg. He traces the mechanical origin of this and that adaptation. He says this feature and this are due to pressure; but of this third particular adaptation no account can be given of its origination by pressure, and therefore we must say that it is due to design.[1] This makes the

[1] "The art also with which the young insect is coiled up in the egg presents, where it can be examined, a subject of great curiosity. The insect, furnished with all the members that it ought to have, is rolled up into a form which seems to contract it into the least possible space; by which contraction, notwithstanding the smallness of the egg, it has room enough in its compartment and to spare. *This folding of the limbs appears to me to indicate a special direction*; for if it were merely the effect of compression, the collocation of the

evidence of the Divine design vary inversely with the evidence of the physical process, *as if purpose was something which did not display itself in action.* There was, therefore, a tendency to feel that when a new physical explanation had been discovered, a new antecedent for the effect which we are immediately observing, we get rid of, or we decrease *pro tanto*, the necessity for believing in God. In fact, God took this place in science; He was the power to fill up gaps which could not be bridged by a description of definite changes. In science He was the axiom necessary to give unity to the scheme of thought. In religion he was the *demonstrandum*, the thing to be proved—proved by the need of Him to explain the physical discrepancy.

A more apostolic divinity.

Now, that is obviously a very narrow and unchristian view of God. God is not a Power Who has to be supposed in order to complete the conception of a physical process which is imperfectly observed or understood. We have vastly different sources of our confidence in Him. But that line of thought we must not now pursue. We must be content to observe that just so far as Christians were possessed by this narrow and

parts would be more various than it is" (Paley, *Natural Theology*, cap. xix.). Some further illustrations of the older teleology are placed in an Appendix, p. 275.

limited view of God, they were open to a shock when a physical cause or set of causes was suggested which had not before been considered, and which seemed to explain most of those adaptations which Paley had triumphantly pointed to as unintelligible. They now became intelligible. There was now framed, under the name of natural selection, a scheme of thought by which it could be shown how, by the excess in multiplication of individuals, and by the struggle for life under the stress of circumstances or the competition of other individuals, various advantages, however minute, might be selected for survival and for accumulation by inheritance. Since those days of the beginnings of the doctrine of natural selection we have gone a very long way in re-examining it, strengthening it, and at the same time showing how far we are from certainty with regard to it. Nevertheless, taking it as it stands as a theory having a high relative degree of probability, at any rate for large classes of facts, you see how it came into conflict with a proof of God which relied upon the absence of any clear perception of the manner in which things came to be what they are. If you could show a physical antecedent for a given adaptation, so far you had got rid of the need of God.

This is the cause of the supposed conflict between natural selection and the belief in God;

and the cure for it we have of necessity described in speaking of the evil itself. You learned yesterday,[1] no doubt, the latest news from medicine—that the cure for the diseases produced by certain bacteria is to be found in the juices expressed from the bacteria themselves crushed, triturated, at the temperature of liquid air. Well, something of the same sort happens with the supposed contests and conflicts between religion and science. The cure for them is found in that which is extracted from the crushing of the very thing—the false antithesis—which was the source of danger. In the very effort to bring our minds to bear upon these supposed new difficulties we have enlarged, we have corrected, we have brought back again to a patristic model, to something more like what the ancient teachers of the Church held, our conception of God. It is thus, is it not, that we attain once more

> "to perceive that God
> Knew what He undertook when He made things"?[2]

We see more and more clearly that we must exclude all notions of Him as separate from His

[1] The reference was to Dr. Macfadyen's account of the treatment of typhoid, communicated on Thursday, 12th March, to the Royal Society by Lord Lister, and noticed in the *Times* of Saturday, 14th March, 1903.

[2] Robert Browning, *Prince Hohenstiel-Schwangau*, Works, vol. xi. p. 113.

world or merely labouring in it, merely fitting this to that. He is in all and over all and through all; transcending all, and yet infinitely near and present to all. And to Him belong all the conditions, as well as those things which take place in the conditions. He is powerful on both sides of every pressure. He is in the adapted and in that to which it is adapted. And as we gaze further on the world, our wonder is, not as Paley's sometimes was, that this or that insect's structure shows a form which we cannot explain, but that the whole great complex, the vast and unimaginable interplay of forces coming from beyond the furthest star, results in the varied scene of life and beauty which we see and in which we share. The wonder of all wonders is that we can understand it, that we can look upon it as if from without as well as from within; that we can draw and abstract from it conceptions of its origin, that we can begin to trace and divine our own place in it, according to one part—the outward part—of our own nature. This is almost the supreme wonder, that besides the vast subject-matter for knowledge there is in us the faculty for knowledge, the faculty for more than observation—for drawing from the world clear conceptions, growing though still so small, of the law of its movement and being, that being which stands by virtue of God's continuous creation.

Faith has gained by attention to modern science.

"Not by the operation of a law
Whose Maker is elsewhere at other work." [1]

I am obliged to pass swiftly from a thought which might be developed at great length. Let us approach the world with a spirit set in tune, and then we shall find its hidden harmony. There is nothing impossible for faith in the scene upon which we look; and what we want for Christian assurance is not this or that discovery, interesting as it must be, of the probable form of the starry heavens—this or that proof that no other planet but ours bears a life like our own. These things, interesting as they are, are not essential to our religion. What is wanted is that our own organ, which is the most marvellous product of the whole—the organ of knowledge and contemplation—should be set in order progressively, more and more kept in calmness and in reverence and in hope, and should fix itself firmly upon those other intimations of the Divine which are not foreign to any of us; and, thus reassured, approach the study of the world in freedom and good hope.

Not the world observed but the observing mind was amiss.

* * * * *

I spoke just now of a typical mind hampered, entrapped, perplexed, not by the spectacle of the world, but by the supposed necessity of this or that abstract formula, such as natural selection,

[1] Robert Browning, *Luria*, act v.

which has been manufactured to express, with an approach to truth, a small part of the many facts before us.

Let me remind you, in conclusion, of one who is typical of the other sort of mind, Louis Pasteur,

Pasteur.

in my poor judgement the greatest scientist and the greatest Frenchman of the age that has passed. He was not one tied up in narrow ignorance, his mind frozen by dogma. He was not one, as perhaps you may suppose, like Louis Agassiz, who spent his life in accumulating piles of fish and mountains of fossils and manufacturing monographs with a staff of clerks—a giant investigator and no more. Pasteur was one as eminent in theory as was Darwin. He was one who took a foremost place in chemistry before he ever touched the question of living matter. He was the author of a revolutionary change in our conception of certain processes in crystals. He went on to become the master in succession of all that was known and all that is done in respect of fermentation, of the study of disease and of the victory over disease. He moved securely in a great range of the most minute facts. He could lay his hand in a way which seems to us inconceivable upon the secrets of nature. If ever there was a man who might have been absorbed in what he himself has called the enchantment of science, it was this man. If ever any

man might have been intoxicated by the pride of intellectual success, Pasteur might have been. His manner was dignified and somewhat reserved; he had the gravity of those whose labours have won great influence. But he was accessible and very considerate to those who came to him to learn, and very patient in showing them the way about his wonderful works.[1]

But what set him above the dangers of unbelief and made him as much remarkable as a believer as he is remarkable among the explorers of nature, was the practical, the loving purpose of his work. He did not seek to know nature only that he might construct some description of her with which his own name might be imperishably connected. What he desired to do, and what he succeeded in doing, was to combat disease. He has absolutely abolished two diseases, and has opened the way towards the fight which has every day more success against almost all the other diseases that we know. Side by side with Lister, he is the man to whom surgery must look back as the one who has made it what it is to-day, with its wonderful success, its wonderful, its justified courage. And what was his life? Was his life tied up by the bondages of doubt? Or, by contrast,

[1] Through the kindness of Sir James Paget, I had the advantage of going with my brother to see M. Pasteur and M. Roux in Paris, in 1889.

was his life one intoxicated by little certainties about the origin of metameric segmentation, till he did not care any more about God and the soul ? Not at all. Pasteur speaks like this :—

"There are two men in each of us, the scientist . . . and the man of belief ; . . . the man who will not die like a vibrio "—(that is the germ, for example, of cholera)—"but who feels that the force that is within him cannot die. The two domains of science and of faith are distinct, and woe to him who tries to let them trespass upon each other, in the so imperfect state of human knowledge." . . . "I see everywhere the inevitable expression of the Infinite in the world : through it the supernatural is at the bottom of every heart."[1]

This is the man who, surrounded by all the honours which the entire scientific world could heap upon him, turned away from his business and his praise to read the life and to admire the virtues of St. Vincent de Paul ; who loved Littré, not because he was the greatest man of intellect of his day, but because, together with his wife, he represented in Pasteur's eyes the twofold worth of human life, in the love of God and the love of the neighbour. This is the man, the leader in what is most characteristic and probably most lasting in our science of nature, who died as he

[1] *Discours de reception à l'Académie française.*

had lived, a true Frenchman, fixed in honour, fixed in love, and fixed in religion; with one hand resting upon the symbol of our Saviour's Passion, the other in the hand of his wife—"True to the kindred points of Heaven and Home."[1]

[1] The importance of Pasteur as a Christian has not been sufficiently considered. Some persons obscure the significance of his attitude towards unbelief by laying an exclusive stress upon the fact that his discoveries and cures involve the artificial infection of animals with disease. The name of vivisection (made to cover a wide range of facts from simple inoculation to cruelties which were condemned as heartily by Huxley and other naturalists as by ourselves) is brought in to alarm the ignorant and to degrade the name of a great man. It may rightly be asked whether experiment upon living animals is ever lawful; and, if so, under what circumstances and for what purposes; and whether the achievement of a chosen purpose is necessary to render experiment guiltless. These are ethical questions of great importance and urgency, but also of great complexity. And they require much patience and knowledge and clearness of thought for their profitable discussion. But there is no good reason for their being discussed whenever and for whatever purpose Pasteur's name is introduced. At any rate, it is impossible for me to combine their treatment with the argument of this book. The name of Pasteur is here cited as that of a man deeply immersed in the study of Nature, and at the same time standing quite firm in the simplest faith. He believed heartily in the Incarnation, and this fact challenges the attention of all who are interested in the relations between Science and Religion.

IV

THE MORE GENERAL EFFECT OF EVOLUTIONARY DOCTRINE

The course to stop short of questions concerning revealed religion —The general effect upon religion of evolution theories—Witness of Huxley on theism and evolution—Creation—*The Ring and the Book*—Evolution before Darwin a fruitless speculation—The theory of selection applied too widely—Further application of the figure—Evolution really of advantage to theology—But it has left loss in many minds—The return to faith—The character of religion.

"The voice of the Lord cleaveth the flames of fire. The voice of the Lord shaketh the wilderness; the Lord shaketh the wilderness of Kadesh. The voice of the Lord maketh the hinds to calve, and strippeth the forests bare: and in His temple everything saith 'Glory.'"—Ps. xxix. 7–9.

THERE are the two sides of the revelation of God, God moving in that series of changes which we call nature, and God sitting above the water-floods, still recognized by the believing heart. In the visible scene His thunder shakes the mountains, His lightning cleaves the woods, and the operations of organic life are in His Hand; but above, in His temple, the assemblage of spirits saith "Holy." In that spiritual world which is

built of minds, in the great peace which passes through the storm, "doth every one speak of His glory." So it has ever been. There have always been the two sides of our recognition of God, and, consequently, the possibility of forgetting one of them. And it is good that we should remember that no substantial change is made in the age-long debate between those who regard solely the outward spectacle and those who regard as chiefly significant the inward sense of God—that no substantial change is made by any difference in our conception of the details of the outward scene. One often hears that science has made this and that change for religion, with regard to questions about which, as a scientific philosopher says, science can neither allow nor disallow the affirmative answer of faith. I would even quarrel with the statement, for example, that science has driven the dryads from the wood. It was always known by the wise that trees were made of wood all through; and men chose, wrongly as we think, to imagine some of them also to be inhabited by living sprites. Our knowledge of the texture of the wood, our knowledge of the current of the sap, has neither put the dryad further from us nor brought her nearer. It was always known that nature was natural all through, that stuff was stuff; and men will have, together with their conception, *whatever it may be*, of the stuff, various

conclusions, based upon a different set of considerations, about what there may be besides the stuff. It is not science, it is Christianity, which has driven the dryad from the wood and Pan out of the thicket. For all that science knows, Pan may be lurking now in Kensington Gardens. It has nothing to say in affirmation or in denial of such a presence.

* * * * *

The course to stop short of questions concerning revealed religion.

In the range of subjects to which, if we had time, we might attend, it is necessary to make a strict selection. And after the best thought I can give to the matter, I have come to the conclusion that during this brief series of lectures in Lent, of which next Sunday's is the last, it is our interest to keep to those questions which lie on the hither, or, if the word is better, the further side of positive dogmatic religion. We must think, I mean, about the conclusions of science as they are supposed to conflict with natural religion, with theism, with the belief in God on general grounds, and leave for some other time anything that we may find to say with regard to the opposition which may lie between science and the positive statements of the Bible. And here again I would remind you that Christianity is much more than, or at any rate something quite different from, a simple theism. It cannot be supported on the grounds of a free idealism alone,

which asserts, against the pressure of sense, the higher authority and significance of the spiritual being. That line of thought, inexpressibly valuable as it is, will not carry us all the way to Christianity. For Christianity, besides being an idealism, is also a positive statement about facts in a time series, about things which have taken place within the history of the world we see. We must always, therefore, in our minds divide those two aspects of our religion for purposes of defence. There is on the one hand theism, that affirmative conclusion concerning the world, the only really affirmative conclusion, that the world is somewhat, the world is spiritual, the world is personal in its root and heart; and on the other hand there is the defence, which belongs so very largely to critical theology, of the statements, the positive and historical statements, of the Bible and the Creed. Let us, therefore, be content for the present to leave these latter on one side.

Fixing our minds, then, wholly upon the general belief in God, let us ask once more—what difference has been made to this belief by the doctrines of evolution and of natural selection? Even in view of the detailed or positive problems, it is well worth while to spend time upon the more general question; for if we gain any clearer hold on our own belief in God, if we see it riding more free

The general effect upon religion of evolution theories.

than we once did of the supposed terrors of the detailed statements of science, we shall be in a much better position to consider the Book which comes to us in the name of God. And, further, if we gain a stronger hold upon the faith in the dignity of our own nature, and trust more courageously the inward witness of our consciences, we shall be in a better position to consider what kind of transaction revelation may be —what it must be if it really comes to pass; after what fashion God is likely to speak to real spiritual selves whom He has by His will called into being. Therefore the improvement of godliness and the improvement of manfulness, an increased hold of theism and an increased belief in human nature, are alike of advantage when we wish to approach special points of positive religion.

Last time I suggested, by a very general form of description, what is the teaching of evolution, what is the teaching of natural selection; and I submitted to you that evolution as such has no quarrel with theism as such, but that it is possible to raise something like a debate between theism as such and natural selection as a special doctrine of the way in which evolution has been guided. And, if possible, on a future occasion I shall go on to say that evolution in its broadest expression may be thought to have a real debate with the positive

statements of the first Books of the Bible. There are, then, in my mind, two debates—the debate between theism as such and natural selection, the special theory of evolution ; and a debate between evolution as such and that religion of the Bible and the Church which contains a special account of the way in which God has actually worked.

With regard to theism, I may give you one more witness in support of a contention which I have not at all argued out before you— the witness of Huxley, who, towards the end of his life, took occasion to say that the doctrine of theism is neither stronger nor weaker for the theory of evolution ; no stronger and no weaker, in his phrase, than on the day in which it was invented. That is an important support of my own opinion that theism, as such, does not come into direct collision at all with the doctrine of evolution stated generally. But I am not at all sure that Huxley would have said the same thing in 1857. I wish I had had the leisure to look up certain statements which are put together in the Life of Huxley about it ; but my impression is that at that time he regarded the belief in God as a necessary hypothesis which had to be accepted in order to account for the variety of the world.[1] I think that between 1857 and

Witness of Huxley on theism and evolution.

[1] The principal passages will be found in the Extract from "The Reception of the 'Origin of Species,'" and in a Letter to Sir Charles

1859 he was eagerly seeking for some alternative hypothesis which, in his phrase, would do away with the necessity of believing in "creation"—an employment of the word "creation" to which Christians find it very difficult to give a meaning.

Creation.

For, of course, *we* mean by creation that unimaginable, totally inexpressible, relation which exists between the infinite and the finite. But to some biologists "creation" seems to stand for a set of facts lying inside natural history and about which biology ought to be able to give an account. We do not mean the same thing by creation. But if we may translate his statement into terms a little more intelligible, he meant that the doctrine that God has guided the evolution of the world will account for the fact that it has grown up into an order, into a cosmos; and that if we could find some mechanical process by which of necessity varieties might appear in the world, we should *pro tanto* have got rid, as I said last Sunday, of the need of the belief in a Person guiding the changes of which we see the results.

Now, when the doctrine of natural selection came before Huxley, at first he was very incredulous of its truth; but in time he saw the great force which belongs to the treatment which Darwin has given to the subject, and he accepted

Lyell, June 25, 1859; both in *Life and Letters of T. H. Huxley*, Eversley edition, 1903, vol. i. pp. 241 ff. and 249 ff.

the theory provisionally. And we may say that he accepted it as an alternative hypothesis, accounting for the *guidance* of evolution, and therefore doing away with the necessity of belief in the personal will of God as ruling the process.

And here let me in passing recall your attention to what I am sure I must have spoken of before—the peril in which all religion stands which regards God in this light, as part of a working hypothesis to explain a series of physical changes. If this is our religion, then just in so far as there is suggested a mechanical self-acting process by which the appearance of guidance might be produced, so far also we lose hold of our need of God and our belief in God. And therefore it is very important continually to rebase our religion, not upon any such narrow conception of God as a force intervening to bridge the gaps of physical sequence, but rather as One Who finds His primary witness, though by no means His only witness, in the wonder of our own moral, spiritual, and intellectual nature; Who has, as I think Emerson says, an inlet for the eternal wisdom in the heart of every man.

Now I wish to ask your attention to a point which I mentioned briefly when first I had the honour of addressing you—one part of the reason why religion has lost more in its conflict with science than it ought to

"The Ring and the Book."

have lost according to the rules of debate. And if you will have patience with me, I will get to it by considering first the change which has taken place in our scientific conception of the world by a process for which, in my own mind, I have long been accustomed to find a parallel and an image in the process described by Browning in the beginning of his poem, *The Ring and the Book*. Let me remind you of the opening lines of that poem. I think they help us quite admirably to understand the changes which have taken place in our conception of the world. He describes, you know, how the chased ring of Roman work, "made to match by Castellani's imitative craft Etrurian circlets," is formed out of a piece of gold too thin, too soft to bear working. There is not enough of the precious metal, and what there is is of too frail a fibre. How, then, does the ring get its carving, its completeness ?—

> "There's one trick,
> Craftsmen instruct me, one approved device,
> And but one, fits such slivers of pure gold
> As this was,—such mere oozings from the mine, . . .
> To bear the file's tooth and the hammer's tap :
> Since hammer needs must widen out the round,
> And file emboss it fine with lily flowers,
> Ere the stuff grow a ring-thing right to wear.
> That trick is, the artificer melts up wax
> With honey so to speak ; he mingles gold

With gold's alloy, and duly tempering both,
Effects a manageable mass, then works:
But his work ended, once the thing a ring,
Oh, there's repristination!"

(which means, I believe, a return to the gold's first condition—)

"Just a spirt
O' the proper fiery acid o'er its face,
And forth the alloy unfastened flies in fume,
While self-sufficient now the shape remains,
The rondure brave, the lilied loveliness,
Gold as it was, is, shall be evermore,
Prime nature with an added artistry.
No carat lost, and you have gained a ring!
What of it? 'Tis a figure, a symbol, say;
A thing's sign: now for the thing signified."

Evolution before Darwin a fruitless speculation.

The notion of evolution had, I venture to say again, haunted for generations the minds of men, but it found no substantial ground to rest upon. There was too small a supply of fact. Here and there were significant circumstances in organic life, but the whole collection was far too slender to shape out into a theory which could stand by itself. We had "mere oozings from the mine;" here a touch and there a touch, touches which people believed in much more in the seventeenth century than they did at the beginning of the

Victorian era. But evolution remained, for all the efforts for example of Lamarck, a totally unfruitful speculation. Science, so far as science advanced in biology, advanced quite independently of this dream of developement which was flying about in the upper air of thought. That remained a fantasy, an amusement.[1] It was supported only by strange and whimsical theories like those which you may read in *The Vestiges of Creation*, which now, I think, no scientific man would hold to contain anything of scientific worth. But then came the conception of natural selection, through Darwin, through Wallace. And as soon as this conception,—which I positively must not attempt

[1] The same phenomenon, viz. a theory one day to be accepted on the surest grounds but at first partly recommended on the most fanciful, is presented in the *De Revolutionibus Orbium* of Copernicus. I owe my acquaintance with this book, and very much besides, to Mr. Wilfrid Ward.

Great theories, like great men, seem sometimes to have been strengthened by a youth of play; they have had their toys as Wellington his bandalore and tea-tray sledge.

One may almost say of modern science in general that its day of solid achievement was preceded by a day of light-hearted or of sombre fancy. Van Helmont's speculative search for the Vital Principle resulted in the discovery of fixed gases, and thus contributed largely to our present doctrine of the constitution of matter.

It seems that, in respect of material things, we have an inkling of truth before the discovery of facts, and arrive at some right conclusions before we possess their premisses. But there is generally an interval of oblivion or discredit between the prophetic fancy and the sober hypothesis capable of verification.

Speculations which at present are disfigured by bad science and bad logic may some day prove to have been forerunners, at an interval, of a real system of knowledge co-ordinating real evidence.

to unfold,—showed a method by which the flood of life, the existence of which must always be presupposed, gained the specialization which we now see, as soon as this conception was launched, although it was launched as an unproved hypothesis, it at once put the facts wonderfully into order. Further—and notice this especially—the theory not only set forth in an intelligible form all that was then known of the appearances in organic life which suggest their origin by descent with modification, but disclosed and drew together multitudes of other facts which had before been totally unsuspected. For example, the whole range of facts which is generalized under the term "geographical distribution" formerly contributed nothing to a systematic conception of animal life. The strange appearances which we now call "protective mimicry" were also utterly inexplicable, and lent nothing to any system. They were the works of the Creator indeed, and good men then, as now, reverenced them as marks of His Hand—that glorious Hand which now, as much as then, we may still recognize in them. But these special facts contributed nothing to a biological conception of the origin of animal and vegetable life. When natural selection came in, with its notion of a surplus multiplication of individuals leading up to a struggle of selective elimination, then at once all those strange facts, and other facts equally remote

and strange, such as the phenomena of parasitism and symbiosis[1] and other unusual conditions of life, not only received an explanation, but themselves yielded enormous support to the new theory, and in doing so made evolution in general stronger in its hold upon men's minds, stronger in its actual claim to probable certainty. The same thing may be said of the facts of geology, the series in time of organic forms; and again of certain facts of what is called ontogeny—that is, those parallel changes within the individual life which reflect and, as it were, shortly recapitulate the stages of the descent which makes the history of the species. All these facts received a new clearness, a luminous explanation, and themselves in turn built up the probability of the general doctrine that organic life as we see it is the result of the descent from simpler forms accompanied by modification. Darwin himself, not only at the beginning, but at the end of his life, said that he had no concern with the theological conclusions which might be drawn from his biological doctrine. Darwin was himself a Little-Darwinite. He had no notion of being the king of an empire of thought. He had no notion of his principles being taken out from their proper connexion with organic life, where we actually know that there is excessive multiplication and so forth, and

[1] See note on p. 263.

taken over to be a kind of formula fit to explain all things that are.

Such a notion was far from Darwin's mind; and even with regard to a much more limited speculation he said that he was himself unconcerned with the question whether or no all the forms of life were descended from a single primordial form. That, he said in effect, is a matter of probability with which I am not concerned: what he wished to do was to suggest an explanation of a certain range of facts—namely, those which indicate the origin of species.

The theory of selection applied too widely.

So then, we may say, the probable hypothesis of natural selection, which remains to-day only probable, and which Huxley to the last said lacked that consistency which would enable it to pass from the region of speculation to the region of scientific dogma—this theory, itself only probable, has given something almost more than probability to the wider theory of evolution. It has been like the alloy added to the pure gold. You have your small supply of "pure crude fact," unfit to bear the file's tooth and the hammer's tap. But put something into it, something which is not "pure crude fact," something which is the manufactured product of ingenuity; and this thing, though not itself part of the undeniable facts of nature, though it was rather "gold's alloy than gold itself," yet enabled the scanty supply of gold

to gather indeed something of additional mass and bulk, but also to gain, for the time at least, a new consistency which enabled it to undergo the handling of constructive thought. And if that process of criticism which has been going on so long goes further still, and we are obliged at last to acknowledge that natural selection does not possess that high degree of probability or, on the other hand, that fitness for general application which we once hoped, nevertheless the advantage for evolution which arises from Darwin's theory will not be simply cancelled. What I submit to you is this, that, suppose the biological criticism of such writers as Semper, or Cope, or Eimer, or Cunningham proved to be (as I am far from saying it is) "the proper fiery spirit" by which "the alloy unfastened flies in fume," we shall still have our ring. Suppose we have to say good-bye to that special theory of the manner of evolution, we shall not have to say good-bye to our new security in the probability of evolution in general. It has gained in the interval too many new supports for that. That, then, is my little story of *The Ring and the Book*.

Further application of the figure.

Now for a still further application of it. Just as evolution will wake up surer from its dream of natural selection, even if that proves to be a dream, so there is something which will be left behind and which *is*

left behind in theology, only in this case it is something bad as well as something good. What has, in fact, been the later history of your doctrine of evolution by natural selection? Why, this: you have applied it as if it were a finished weapon with a cutting edge which could be put to any substance, quite forgetting that its sureness arises from the actual facts of organic life, and has, so far as we know, no application whatever to the great facts which lie beyond; for example, in stellar astronomy.[1] Having gained this formula of the 'creation' of a special thing by the elimination of the rest, having acquired the generalized thought that things are *what* they are, because if they were not what they are they could not be *anything* at all, some have proceeded to apply the thought, as if it were a sure mathematical formula or solution, to explain the general structure of creation. In the name of evolution, a fact of organic life on this planet, we are invited to believe that all things come to pass by the inevitable succession of inevitable changes. In fact, we are asked in terms of a modern and special theory concerning organic life in particular, to let ourselves drift back to the belief in chance which was sung long ago, and better than ever since, by Lucretius.

[1] The doctrine of *Evolution* has, of course, in the department of astronomy, one of its greatest chapters, the nebular theory of Kant. But this has nothing to do with natural selection.

Now, that involves a perfectly unjustifiable step in logic, in argument. Here we have a plain case in which the thing which has its origin in a particular range of circumstances is endowed by thought with an effect in totally different regions where we have no proof of its action. And then, further, another part of the added alloy was the statement that the conception of evolution was in conflict with theism—that the conception of natural selection was in conflict with the idea of creation. Men have been busily examining these statements for years past, and they have shown—I think those who have followed the matter will see, with a high degree of success—that they have no foundation at all in genuine thought. And, on the contrary, theology finds itself, where it is seriously at work, immensely helped in its deeper studies, in its approach to the thought of the relation between God and the world in general, by this very conception of evolution; by the thought that what we see is not a perfect thing which shows its destined end, but a growing thing whose nature is to be guessed by the indications of its purpose, and not by the present and evident successes of its labour. We are able, in the very name of evolution, to check those who would demand a present summing-up of all the evidences of God's purpose in the world, who hold, as it were, a knife

Evolution really of advantage to theology.

to our throats, and say, "Confess that He is either powerless or bad, since He made so bad a world." It is precisely in the name of evolution, it is by virtue of just this conception of change still in progress, that we answer that nobody is ready for such an alternative. And the answer is needed, for in the world of thought there are spectacles which are rather like what we remember, some of us, long ago at school. Cast your mind back to the first beginnings of education. Remember the governess or the master at the preparatory school giving out a problem of mental arithmetic, or writing out on the board a long sum for addition or division. Can you not also recall the ardent infant who shoots out an arm to say that he knows the answer, meeting the calm rebuke, "My boy, I have not yet finished setting the question"? That suggests the answer which we must give to those who demand from us a sudden reply to the alternative, "Is God weak, or is He less than good? One answer or the other you must make your own, when you see the world as it is." To this we must say, "We are not prepared to give you any answer on these grounds, because the question itself is yet a-setting, and we know not by that kind of inspection how it may turn out." If we know, it is by another road; if we know, it is by a spiritual reaction between our spirit and that Spirit which is our Father; it is

by the answer of love to a love which makes itself felt through the storm, through the cloud, of physical experience.

But, to return, further examination abolished the supposed opposition between evolution and creation. Nevertheless, some mischief remains. We have not really lost, but the impression remains with us that we have lost. There are multitudes of Christians who have felt the supposed difficulty—who have taken in, so to speak, that added thing, not gold, but gold's alloy ; whose minds have been carved, not to the fair ring with lilied form, but into a grotesque image of doubt or despair.

But it has left loss in many minds.

But when through careful criticism, when through devout thought, when through the labours of philosophy, the alien thing, the supposed anti-theological implication of science, "unfastened flies in fume," the shape remains. The man does not, by the elimination of error, get back to his old positive attitude ; he does not thereby recover his peace of mind, his prayer. He is willing to admit that what he supposed to be a conclusion destructive of belief is not, indeed, on inspection, destructive—

> "Just a spirt
> O' the proper fiery acid o'er its face,
> And forth the alloy unfastened flies in fume——"

but he is not as he was.

You have the old substance, perhaps, and a ring to boot, as it seems; but your gold? There is a work of art, indeed, but a work of most meretricious and miserable and confining art; not something *more*, by reason of this intrusion of an alien thing now withdrawn, but something *less*. For the thing added has altered the specific gravity and the centre of gravity of the mass of life; and, teaching it new dependences, has left it, in withdrawing, unbalanced. I am not careful to maintain the consistency of my figure. It is the *fact* I aim at—the fact that the destruction, the extraction, of error, does not of necessity leave the old truth triumphant. The substance of life is for the time impoverished, its energy weakened by the double process. For a man whose faith has been checked by intellectual negations, the cure is not found when his intellectual conclusion has been reversed. There is still a long labour of doubt and difficulty. He has to pass through great and dark chambers of search. He must touch ground in the mere acknowledgment of ignorance concerning God before, in a renewed freedom, he is able once more to apprehend those ancient foundations of our faith which God has planted in ourselves.

I might most easily—too easily—give you out of the stores of my own memory, but also of my own most sensitive affections, an account of such

a life as this, in the end triumphant over doubt; a life fit to be remembered, at least by name—the life of George Romanes. But I cannot bring myself to do so, because I know about it very well. It is important, however, to remember in ourselves, and to remember in our sympathy with the society to which we belong, this process which I have named—well or ill—the process of the Ring and the Book, the sad result which comes from an intrusion of alien matter, but which does not depart when the intrusion is withdrawn.

The return to faith.

And so, if there be any here who have felt the pressure of that doubt which comes from a new interest in outward things, who have thought that perhaps the mechanical explanation of organic varieties would carry them, and ought to carry them, to a necessitarian explanation of the whole of being; if there are any who are not sufficiently awake to the general wonder of things, who do not feel, as Coleridge felt, that the mystery of mysteries is that there should be anything at all and not nothing; whose souls, asleep to the great marvel of existence itself, have been absorbed in considering the process of a supposed mechanical manufacture;—these cannot find their safety or their renewed religion only by a process of argument. All that argument can do for them is to clear a space where life may act again. Argument is like the whip who cracks his

thong to keep the hounds outside a given line, that within it men may move at ease. And so the supposed argumentative necessity of unbelief is to be *met* by the richly evidenced argumentative liberty of religion ; but its effect is to be *reversed* only by the rising again in personal adventure of the soul towards God.

The character of religion.

For religion is not, like natural science, a conclusion which arises from the accumulated possession of a great number of particulars in experience ; nor is it the necessary result of a clear inspection of our inward life, a law of thought without which nobody can think at all. It is no mere philosophical conclusion, even if that conclusion be theism. But it is the reaction of a spiritual being to the love of the Spirit which has created him. It is the root most inward, most central, of attachment between the man and God. And it is from this root, firmly held, deeply planted, entirely trusted, that we see grow out, more or less gradually, all the special affirmations of revealed religion. It is to this almost native commerce between Himself and His creature that the Creator appeals in what is called revelation. It is upon this sympathy that the Saviour makes His claim. It is in virtue of this kinship, however obscured, that we recognize that He is indeed the only-begotten Son ; that He is that perfect

Other, yet the Same, Who is alone worthy to be the outcome of the perfect God.

It is by *this* path of apprehension that we see that the created finite thing cannot look to find the evidence of its goodness in a mere flawless integrity as if it could be perfect by itself; but finds the evidence of its goodness in its own groaning; for the perfect God cannot make another being infinite, perfect, all-holy, like Himself. That would be to call into being another God, which is impossible. Nor would this second Existence be a creature, for it would be infinite as God is, eternal *a parte anteriori*. But the good thing He has made is constituted *non in perfectione, sed in capacitate recipiendi perfectionem;* not in itself complete and good, but in a wonderful condition to receive the adorable fulness of Him Who has made it, that it might be empty for Himself, Who has given it a reality which consists, or which finds itself, in being directed towards Him, and a destiny which completes itself in self-emptying and in the total receiving of Him Who is alone all Good.

V

AGNOSTICISM AND DETERMINISM

A twofold doubt—I. Is science the only knowledge?—With divided knowledge we must be uncontented but not impatient—II. Is law exclusive of all freedom?—Science has extended the range and made more intimate the penetration of law—Religion supposed to be in regions outside law—The extension of law will go further—A suggestion—Science must speak in the mode of necessity—Freedom is a fact for experience—Freedom seems to grow where law grows clear—Example of agriculture—Two primitive extremes of thought—The freedom of God—Ward's image of the mice in the piano—Determinism a conclusion from limited experience.

"Doth the plowman plow continually to sow? Doth he continually open and break the clods of his ground? When he hath made plain the face thereof, doth he not cast abroad the fitches, and scatter the cummin, and put in the wheat in rows and the barley in the appointed place and the spelt in the border thereof? For his God doth instruct him aright, and doth teach him. For the fitches are not threshed with a sharp threshing instrument, neither is a cart wheel turned about upon the cummin, but the fitches are beaten out with a staff, and the cummin with a rod. Bread corn is ground; for he will not ever be threshing it: and though the wheel of his cart and his horses scatter it, he doth not grind it. This also cometh forth from the Lord of Hosts, Which is wonderful in counsel, and excellent in wisdom."—Isa. xxviii. 24–29 (R.V.).

This also cometh forth from the Lord of Hosts. "It came from Him," says a commentator, "and is an illustration of His own method of working."

To-day, in attempting a kind of close, though not a full close, it is well that we should seek to press on to the fundamental fear which we have with regard to natural science.

Beneath all special statements of doubt, and remaining after we have said all we can in special defence of faith, there exists, it seems to me, in many minds a twofold suspicion or fear, or perhaps in some minds it takes the form of a twofold hope. There is, first, a suspicion concerning knowledge that science alone is real knowledge, and that the other things which go by the name of knowledge are only fancies spun from our own minds. And the second suspicion is one concerning the world, that that also is a fixed and ultimate scene, a reality absolutely determined in its general history and in all its details ; that the science which seems sometimes to be the only real knowledge corresponds to a universe of law from which freedom is excluded. Those seem to me two propositions in which one might state the fundamental fear : that science alone is real knowledge, and that it corresponds to a universe of law from which freedom is excluded. The claim for natural science that it is the only and the sufficient knowledge is called, by a singular modesty, *Agnosticism*. The denial of freedom fits one of the senses in which the word *Determinism* is used.

A twofold doubt.

On the first point, that of knowledge, I only offer one or two headings of thought. There will be no time to develope these at all. But, on the other hand, I dare not leave them unspoken because there has been something to object to, even from my own point of view, in what I have already said.

I.—Is science the only knowledge?

We have tried to speak of the reality of spiritual knowledge. We have tried to show that our interest does not lie in the disparagement of any particular theory concerning the world. Indeed, for my own part, I have for a good many years been accustomed, whenever I have had occasion to express myself on these subjects, to minimise the difficulties which attend scientific theory ; always, for example, to make the most of the certainty of evolution, the most I can of the probability of natural selection, lest it should be supposed that we have a theological interest in weakening either of those theories. It is very important that we should not seem to have a theological interest in weakening any particular theory about the physical world. But we have a theological interest and a spiritual interest in protesting against that being taken for certain which is uncertain, whatever it is.

In the second place, our interest does not lie in the disparagement of natural or physical knowledge in general and as such. It does not lie in

the direction, that is to say, of scepticism, of idealism as it is misunderstood by the common-sense man. I must remind you that idealism in Berkeley's or in any form—the statement that the criterion of reality is not in outward things—suggests to the plain man the notion that we deny the reality of the external world or the soundness of the knowledge which comes from it. That notion ought to have been by this time driven away, but it is not so wholly. No idealist has any interest in denying what the plain man means by reality. We think with him that his reality which is phenomenal reality is phenomenally real.

Religion or spiritual thought has no interest, any more than philosophic idealism, in disparaging natural knowledge in general.

Nor, in the third place, has it any interest in segregating the two kinds of knowledge. And this is the point where I have to make my explanation. For I artlessly quoted an artless phrase of M. Pasteur in which he speaks of the two kinds of knowledge as being quite separate. I have, therefore, to add that I did not mean that I thought his expression philosophically satisfactory or sound. On the contrary, thought must always press on towards a unity. It must never be contented without a unity. It must never think to abide in a state in which the knowledge of the

world is one thing and the knowledge of God is another thing, or suppose that these may be kept apart in sealed chambers. That would be what is called obscurantism, or sometimes, and quite wrongly, mysticism ; the notion that religious knowledge has nothing to do with natural knowledge and need not be conciliated with it, but rides free in a region where it can neither be proved nor disproved, in the air. No ; thought must never be contented with less than a complete unification of knowledge.

But to refuse to be contented is one thing, and to be impatient is another.[1] We are not to be contented, but we are not to be impatient. In fact, uncontentment itself (for we can scarcely call it discontentment) carries with it patience of this kind, because, precisely on account of the fact that it desires to co-ordinate *all* the things that it knows, it determines not to let go of any *one* of the things that it knows. It is just on account of the duty of unifying thought that we must keep fast hold of parts of thought which seem to be separate one from another. We must not try to reach a unity by defining as outside reality the things which we cannot understand. You know very well a theory of the Church which arrives at a

With divided knowledge we must be uncontented but not impatient.

[1] "To hope and not to be impatient is really to believe" (George Meredith, *Harry Richmond*, chap. iii.).

conception of its accomplished unity by the simple process of defining as outside the Church every one who does not agree with a certain part of the Church. A man can see a harmonious, indeed an unanimous, Church on that plan, by selecting the part which agrees with himself as the true Church and saying that the other parts do not belong to the true unity. But he who seeks after a real unity of the Church which can include all who belong to Christ must take exactly the opposite course; and, being discontented with the disunion of the Church, he must be patient with the disturbances of the Church.

Even so in general thought, it is the main duty of thought to arrive at a unity, and on that very ground we have to be patient with discrepancies. We do not mean by this that a final philosophical solution is discovered by stating two kinds of knowledge, but we point to a circumstance in experience and we point to a rule of conduct. And so in what I have said at this time and at other times about patience with regard to discontinuous portions of knowledge, it would be very unfortunate for me if I were taken to mean that we must be permanently and, to use a convenient phrase, *absolutely* contented with it. We seek after an absolute and final unity which we heartily believe to be God, but there is a *proximate* plurality in experience; and just because

we seek after a final unity we must be patient for a time with this proximate plurality. Indeed, the perception of difference is itself the implicit possession of a unifying principle, and it is the work of thought to render that implicit unifying principle explicit in explanation.

II.—Is law exclusive of all freedom?

Now we pass to the second thought—the thought of the uniformity of nature. Is not science, and science alone, in relation to a universe of law; and is there room in that universe for the freedom of which faith speaks?

We agreed long ago that there could be no *religion* unless we believed in freedom in some true sense. Now I will go further, and say that there can be no *conduct* without a belief in freedom. And in those two points I shall carry everybody here with me. But I shall not carry everybody with me in a third assertion—namely, that without freedom there can be no *knowledge*. But I submit to you that if all that we think is determined mechanically and arises as a necessary reaction from the world in which we live; if what we call our thoughts is nothing more than the resonance of a bell which must needs sound in tune with the vibrations which are round about it;—how does there come to be such a thing as error? How does there come to be such a thing as the progressive correction of error? How

does there come to be such a thing as falsehood? Even in this realm of apprehension, of knowledge, I am more and more convinced that there is a place for will, a place for freedom. And it is by the exercise of the will, though a subtle exercise which does not seem like mere purpose—we may rather call it attention—it is by an exercise which is fundamentally free and personal that knowledge itself advances.

I admit, then, that if science is indeed in relation to a universe of law in which there is no room for freedom, we may altogether throw up the cause of religion.

In respect of this matter, what has science done? In the first place, it has extended our perception of the *range* of law. It has made us see law extending over regions of reality where we used not to recognize it. In the second place, it has made law appear more *penetrating*, more intimately applied to the details of the world. It presses forward towards a time when there shall be, on the one hand, no region of fact *outside the realm* of law; towards a time when, on the other hand, there shall be no movement so small as to *escape the mesh* of law. It has a tendency to increase the *range* of law in our conception of the world, and to increase the *penetrating efficacy* of law in our perception of the world.

Science has extended the range and made more intimate the penetration of law.

Now, this has made a real difference to religion. For formerly religion in many minds found a refuge in parts of the universe which were supposed to be outside law. To the primitive savage weather seemed to be outside law. There, in the matters of rain and hail, was precisely the home of his devotion. Other things were fixed. If you knocked a man on the head hard enough he fell down. There was law about that. You did not say your prayers, but you hit as hard as you could. But the rain was a different affair. There was nothing to be done with regard to that except to drive up cows to the Bushman on the hill. (It is an interesting circumstance in ethnology that races often venerate the scattered remains of the population which they have displaced. So the Hottentots venerate the Bushmen, and the Kaffirs venerate the Hottentots remaining among them.) There, in the weather, was a place for religion, a region outside any law which you could calculate upon ; and, therefore, a region of facts in respect of which you might properly make prayers to God or to those who seemed to know the way of the god of the country.

Religion supposed to be in regions outside law.

In our day and place science, although it does not profess to be able to foretell with great accuracy the particular changes of the weather, would never admit for a moment that it was outside the range of law.

At a later stage life seemed to be outside the range of law. We saw a world which was fixed in its physical characteristics of heat and cold and the rest, which we called either the uniformity of nature or the expression, the fixed expression, of God's Will. But we considered the diversities of organic life as if they had a different kind of origin, as if they were made by a different class of fiat, and as if they were the result of a freer choice than the relations which exist, for example, between raising the temperature of a metal and changing its molecular condition, between the heating and the liquefying of lead.

That region of life also, although it has not been reduced to stateable law and form, will never now be allowed, I do not say by scientific persons only, but by any thinking men, to be outside the realm of law. We are sure, though we have not proved it, from the advances that we have made in the study of living substance—in medicine, in physiology, in the observation of the varieties of animal life, and, quite lately, in the further scrutiny of the mysterious changes in the nucleus which precede the segmentation of the cell—that, whatever the law be, and however difficult it may be to find it out and to state it in all its intricacy, there is a law of life quite as binding and quite as uniform in its procedure as the law by which water grows larger when it freezes. We may

say the same about the origin of species. Though there again the explanation is not yet found, we feel it to be among the things which might be found if we went on far enough along the right track. The developement of man, both in the sense of his descent as a species and in the sense of his individual growth, is a subject from which science does not turn away as being outside its scope.

And we shall go on claiming more and more things which used to seem outside its range. Mental processes, the movements of the affections and of the will, all these become the subjects of exact observation or of observation which is by way of being exact. Very likely in years to come we shall think our tests were crude and rough or even quite mistaken. Still they are efforts in scientific analysis. And we shall press on until, perhaps, all the movements of thought, will, emotion, appear to be either within the range of law or capable of being brought within it. So, then, the various kinds of experiences and the various tracts of the life of the world in which religion of certain kinds has from age to age found a new refuge, as if retreating from the plains into the mountains, are taken from it, if, which I am far from granting, religion requires a refuge which is outside the law of uniformity. And to those who trust to such

The extension of law will go further.

remote fastnesses it must appear as if religion would be obliged to pass into the air and ride free of facts altogether. . . . This, then, is what science is doing. It is extending, for the mind, the range and increasing the penetration of law.

A suggestion.

I may mention here, although it does not come strictly in the order I have planned, what I think we shall arrive at with regard to our own life. I think that we shall be led to distinguish more clearly than before between all the complex of faculties, even the most inward, in which men energise, and the root of personal being itself. In past ages men did not distinguish between their limbs and their inward centre of identity ; and indeed they were right in an important sense, for one's limbs are not an adjunct or possession ; they are a part of one's self. Still, as thought went on, men separated the willing, feeling faculties of themselves which they grouped together as 'soul,' from the outward, muscular effects of the same self. In our own day, these inward movements are in turn claimed by natural science, and we shall make a further step. We shall be obliged to distinguish between all the characteristics, all that goes to make up that spiritual vessel in which we make our voyage of life, and—I use for the moment an unsatisfactory expression—the essential passenger himself. We shall come to recognize a root of will and choice which lies

below the complex of motives and the complex of capabilities, which we roughly call our inward being. And it is there, not as in its sole residence, but as if in focus, that we shall distinguish a central force of freedom working outwards, the will, to speak figuratively, springing from that hidden place, to the faculties, and the characteristics, and the motives, and the tendencies themselves which form our inward life ; and, through them, developed in the bodily movements in conduct, in the organization of society, and in the widest range of human influence. At the root, just in proportion as we see the range of law going without exception through the whole series of particulars, so much the more clearly shall we be forced to acknowledge this other reality, the mystery of freedom working in the midst of it.

With regard to this subject, I will remind you once more of what at an earlier moment we dealt with, namely, the fact that science is an abstraction, an abstracted operation of the mind ; that it must speak under a particular mode, and that the mode under which it speaks is the mode of necessity. It must speak of things as if they were *necessarily* what they are. If they have their form through the freewill of some being, science, nevertheless, must always speak of them *in so far* as they are determined. Even with regard to the things which

Science must speak in the mode of necessity.

man effects, you would have to make this separation of aspects for purposes of study. If you were inquiring, for example, into the action of radium, seeking to know whether or not Professor Crookes's suggestion as to the gathering in of energy from the subtle movements of the air is the true account of its apparently inexhaustible fount of force, you would have to leave out of account the life history of those two persons to whom we owe so much, Monsieur Curie and his wife. That would not come into the particular class of facts regarded. When we were examining these we could not admit to our scientific analysis the fact that Monsieur and Madame Curie might, if they chose, have let the affair alone. The radium is for this particular analysis a fixed datum. For a wider point of view our present knowledge of its behaviour is due to a person's free choice of the manner in which he should employ his life. But the personal questions form no part of the physical inquiry. Even so the world, though it be made by the free action of God, has to be regarded by science as the one and only possible thing which could have been there. Otherwise our particular and abstracted methods of observation would be upset by problems which do not belong to it. Science, therefore, is bound to speak of all things under the mode of necessity, under the notion that they *must* be what they are.

With these preliminary remarks we face the difficult problem of necessity, a problem to which I have, no more than anybody else, an answer, but about the practical aspect of which every one has a conviction of his own.

I leave on one side, I do not approach, that famous employment of the intelligence, the philosophical defence of freewill. You may think that from the great thinkers of the world—from Hegel or Lotze—you have a formula which makes it plainer to you, or, at any rate, one which enables you to be perfectly sure, that freewill is in the root of things a reality. Or, by contrast, you may think that all philosophical discussions of the matter hitherto have been totally unsatisfactory. But whatever be your view about them, everybody here will admit that freewill is for us an empirical certainty—it is a fact of experience. If it is an illusion, it is a *complete* illusion to which we are all subject. It is as complete an illusion as the illusion, if it be one, of the uniformity of nature ; and that uniformity is as little susceptible as freewill is of philosophical proof.

We have, then, to take freedom, along with necessity, as among those things which are true *for us* in our present experience, whatever be the result of the ultimate analysis of that experience. If it is a mystery, it is a mystery with which we are certainly

Freedom is a fact for experience.

confronted. If philosophy has been a failure in this respect, then freedom is a mystery, but it is a *real* mystery. We live in a world which at one moment, or when we are thinking in one way, seems wholly fixed. We live in a world in which day by day we have alternative courses before us, and take which we please. The old statement of Johnson remains true, if at all, only with a difference. He said that all speculation is against freewill, and all experience is in its favour. This will not hold true quite as it stands. *All* speculation is not against freewill, nor is *all* experience in its favour. There are many experiences, and many stretches of experience, in which we are inclined to give up the notion of freewill because we find ourselves swept to and fro by irresistible forces. We cannot say that, speculatively, there is *nothing* to be said for freewill, and, experimentally, *nothing* to be said against it. Both in speculation and experience we are confronted with these two realities—the reality of necessity and the reality of freewill.

The second point I wish to make is, that in our experience of freewill there is a certain *growth*; and that the growth is significant. It is a variation which establishes the fact that it is not where law is most obscure that freewill is most operative. On the contrary, it is precisely where law is most clear

Freedom seems to grow where law grows clear.

and where law has been best learned and submitted to and mastered (for, as Bacon said long ago, we only master the world by submitting to it), it is just there that freedom gets its chance. There are two men dealing with the ground. One of them is an untutored savage. He knows nothing about laws of growth. He has not gone behind that old devout and most true statement of the matter which St. Paul gave to the Lycaonians, when he said that God gives rain from Heaven, and fruitful seasons. This truth, it may be, he dimly discerns, but he has not learned any part of the ordered manner in which the gift arrives. He grubs in the wood for a root; sometimes he finds it and is glad; sometimes he misses it, and I will not say that he is sorry, but he is hungry. Occasionally he may plant seed, and it is for him an affair of accident whether it bear fruit or not. He knows nothing—does he?—about treating his land with basic slag. He has never worked out the laws—I do not mean abstruse and intricate laws like that of bacterial action upon raw nitrogenous products, the behaviour of those organisms which inhabit the rootlets of leguminous plants, and capture the free nitrogen which would otherwise fly off into space. He does not even know that if you sow wheat it will not come up barley. He thinks of agriculture as a very vague process. The notion of regular

sequence is not in his mind at all. Sometimes he gets what he wants, and sometimes he goes without, and that is all that can be said. Is he the free man, or is the farmer the free man?

Example of agriculture.

Surely the farmer who knows the law of the matter, the farmer who regards it as a rigid machine from whose grip there is no escape, he is the man who will get wheat when he wants it, and potatoes when he prefers them. "When he hath made plain the face of his ground," he does not continue indefinitely to plough in a vague manner. "Doth he not cast abroad the fitches and scatter the cummin," and put in the wheat where he wants it to be, "in rows, and the barley in the appointed place, and the spelt in the border" of his field to protect it from the encroachment of animals? "For his God doth instruct him aright and doth teach him." And, further, he knows what to do with his mechanical means. "The fitches are not threshed with a sharp threshing instrument." That would not be the way to treat this crop. "Neither is a cart wheel turned about upon the cummin; but the fitches are beaten out with a staff, and the cummin" with another suitable instrument. "Bread corn is ground. He will not for ever be threshing it." There is an order in the operations of agriculture. "He doth not break up corn with the wheel of his cart." "This

also," his agricultural knowledge, "cometh forth from the Lord of Hosts, Which is wonderful in counsel and excellent in wisdom." It is part of His gift, and it discloses something of His own method. Surely that is a plain case. Is it not where the law grows plainer, and precisely for the man to whom it is plain, that freedom and choice become effective?

The same variation is observed in the different parts of our own experience. There are some things of which we know the law, and therein we are free. There are some things about which we do not know the law—such as the weather—and about these we are slaves.

Two primitive extremes of thought.

One can put the two poles of feeling about this matter very well in an image which continually recurs to one who travels about the country. There is a time on a railway journey when the antic savage wakes up in us again, when the darkness of the tunnel shuts down as you read your book. Have you never known the feeling that it was an incalculable accident? Have you never known an impatience which was thoroughly unreasonable? You have tapped your foot, perhaps, until the gloom went up, as if it were something which could be altered. I take it that in that moment when you are impatient, as if the regular recurrence of the dark between this and

Sevenoaks[1] were something that could be avoided, you are reflecting the ancient savage who does not read law in anything. It is a moment of ancestral sympathy with him. When we think a little we see that the experience belongs to going by train. There is no getting out of it. There are so many tunnels, and they are so long, and they will not come to an end a second sooner for any desire of ours. There we have the old savage idea of freedom, exaggerated and one-sided, corrected by a simple reflexion on the iron rigidity of the system on which we move.

But, on the other hand, there is the savage, unintelligent belief in *necessity*. I take another journey; this time on a motor-car. Suppose it is an old one, perhaps not of the best make, and perhaps not driven in the best way. There is a breakdown every twenty miles and a wait of half an hour before each fresh start. The antic savage spirit in its opposite extreme rises to the assertion that all motor travelling has of necessity innumerable breakdowns and they all of them take at least half an hour to get over. There is one savage who thinks you might avoid the dark tunnel through which you are bound to go and for which you have taken a ticket; and there is another savage who folds his hands

[1] A more speaking example would be the road between Rapallo and Genoa.

at the innumerable breakdowns which might be avoided by a better mechanician.

I think that those two simple things throw no contemptible light upon the twofold mystery of necessity and freewill. There are times when we think that things are to be changed which are fixed ; and there are times when we think that things must be fixed which ought to be changed. There is no need for us at the present day to grow in the sense of the inevitable. We have a full enough philosophy of the inevitable already. The proper work of the spirit of man is to extend the range of freedom ; and he will extend it, not by philosophical discussion, but by mastering the very laws in the midst of which he dwells, and by bringing to bear upon them that mysterious fountain of origination which is in himself.

I think that those brief examples, if thought over, will do one more good with regard to the uniformity of nature than a more learned discussion. At any rate, I will leave the matter there, in order that I may add a word about another freedom which also concerns us, the freedom of God.

If we are interested in showing that man has in himself a fount of origination, small, relative, confined, and strictly conditioned by the world in which he lives, but yet real ; how much more are we interested in continuing

The freedom of God.

the belief that God is a fountain of unlimited freedom, ruling with sovereign majesty for His own purposes over all that He has created. And surely what we have said about our own freedom within the range of law should carry us to the conclusion *à fortiori* about God's freedom, Who is Himself holding in the hollow of His hand that universe the laws of which we painfully and partially observe. Surely if we who are the products of the play of forces can yet, from our nest within the play of forces, make our change in the sequences of the physical events of which we are the children—and this is one of the greatest mysteries of the world, but it is also one of its plainest facts—how much more shall God, Who is not contained in the physical universe, but contains it, control it to His own ends? How much more shall we continue to believe in His personal freedom of will, although we see uniformity of sequence in the world which He has made?

My brothers, the uniformity of nature, so far as we have discerned it, is nothing but the expression of the stability of God's good pleasure. The sun rises every morning, and we shall not be warm without it. It is the signal of the sure mercies of God, sure in their recurrence, but merciful in their freedom. . . . The very work of man in this world is to answer to the signal;

to know the Father and Jesus Christ Whom He has sent. It is to know the reality of God's controlling power and the clearness of His manifestations within our own flesh, and man ought to grow to know this by what he knows of his own limited self-determination. He ought to look up with joy and reverence to God and adore in Him a great reality, which answers to that small but real spark of freedom which He has planted in us, and which makes the possibility of virtue and of honour.

But instead of this, forgetting our own limitation, or rather in the very name of our own limitation judging the Almighty, we deny His freedom because of the constancy of His gifts. It is very strange—is it not ?—that the naturalistic analysis, which goes to show that the knowledge of men and their mental processes are totally insignificant and hardly respectable, being, indeed, if this interpretation stands, nothing but the inevitable reaction of quasi-chemical changes, should rely upon these very processes which are shown to be so mean for a title to judge of the great reality which lies behind all that encloses us.

Ward's image of the mice in the piano.

You remember the old image of the mice in the piano. You must distinguish it from another story, very valuable, about the beetles in the clock. It is an image invented by Dr. W. G. Ward, not the Ward whose

book, *Agnosticism and Naturalism*, you ought all to be reading now, but another Ward, "Ideal" Ward, one of the men of the Oxford Movement. The image is this, and it is one which carries something like conviction with it to my mind. Dr. Ward pictures a nation of mice living within a piano, which is their world, beyond which they do not pass. The possibility of a supply of food must be imagined. They live within their world of wood and wires. There they are born, and there they grow up. Over their heads continually is music, and they perceive something, though but a little, of its mechanism. You have to suppose them endowed with reasoning faculties not inferior to our own. Now, such mice, says Dr. Ward, observing the sequence of sounds over their heads, enjoying, one may suppose, the music, would at first think that all was 'free' in the savage sense, all incalculable. But as generations went on they would begin to observe the sequences. And then, further, some would arise who observed the fall of the hammers upon the wires and they would say—and it is not an exaggeration of what is said by ourselves—"This music which you take to be a token of a personality like our own is but the result of the impact of the hammers upon the wires, which could only come to pass after this antecedent and that." One can imagine something like a parallel of

some statements of Tyndall. "You can no more expect the tune without the fall of the hammers than you can expect to see the mouse walk upon the ceiling of the piano." Here arises rationalism in the mouse mind. Then, further, there appear in this generation of scientific mice one or two explorers bolder and more persevering than the rest. At last one who has gone up above the hammers and above the wires, who has explored through several joints the system of levers, returns to announce that what appeared to be the incalculable fall of the hammers upon the wires is itself strictly determined by processes which he is quite sure are ultimate and final, the movement of certain rods behind the scene. Under this teaching, under this disheartening gospel, the poor mice lose all trust in anything beyond their universe. The rigorous logic of experience is too strong for them. They see, too plainly to deny it, the sequence between sound and hammer and the movement of the rods behind; and if there are some things which they cannot follow, they are willing to fall down before the authority of *the mouse who knows*. . . . And all the while outside there is some one who ordains the tune, who creates the music, who pours into this machine, through all its intricacy, the reality of a spiritual life, so that beings of a higher order, not living inside the piano, but seated round it, not only

admire the working of art brought out by a skill which they know to be personal, but are also touched by a spiritual message which finds an echo in their own hearts.

Even so, while we, observing the few joints in the machinery which we have been able to trace, think fit to assert dogmatically that the world, in which necessity plainly rules, and in which one thing is determined by its antecedent, can have no reality of freedom behind it, we are like the mice within the piano, and prate our disbelief in the unseen presence of other beings of a higher scale ; nay, in the presence of the humblest village wife who is a believing Christian, and who by her belief has escaped from this shell of carnal and physical experience to a direct intuition of the great Artist, of the real Freedom, of the sovereign Will and Love which lie behind the regulated world we see.

Determinism a conclusion from limited experience.

VI

NATURAL SELECTION AND THEISM: THE SUBJECT RESUMED[1]

The spectacle of life—Recapitulation—Different views of Natural Selection—For our purpose the greatest possible force allowed to Natural Selection—What is Natural Selection?—Selection does not account for Life—The wonder of life is in the whole of it—A dilemma—Natural Selection does not account for variation.

"Then were the entrances of this world made narrow, and sorrowful and toilsome: they are but few and evil, full of perils, and charged with great toils."—2 Esdras vii. 12 (R.V.).

The five Addresses delivered in Lent may, I hope, have been useful in establishing some degree of acquaintance, though it be of a one-sided sort, between the speaker and those who are so patient as to listen. I am still seeking guidance as to the subjects which interest my hearers. Some letters have reached me, and these indicate what is to me a specially welcome fact, viz. that minds are moving

The spectacle of life.

[1] Between the two addresses which are given in Chapters V. and VI. there was an interval of many weeks.

away from particular biological or physical discussions to the wider problems of metaphysics and of faith. It is pessimism which is felt to be the main danger by believers ; and to others it is precisely the doctrine of evil and of sin, the general form of our Theodike, which seems most difficult and most worthy of examination in our Christian belief. Both the tendency to a wider speculation and the wider questions themselves are alike most welcome to me ; but at present and for the purpose of this particular course it seems a duty to keep as near as we can to questions which are usually, if roughly, called scientific. Perhaps when we have paid in this way some very small instalment of our debt to the narrower subjects, we may find opportunity to work together upon deeper questions of life.

Recapitulation.

To-day I return to Natural Selection and its supposed conflict with Theism ; and with regard to this conflict I will recall certain points to your memory. First, in physical inquiry we distinguish Evolution—the general doctrine of the specialization of living creatures by descent with modification — from Natural Selection, which is the supposed guide or directive factor of evolution. Perhaps we ought not to speak of the *theory* of Natural Selection, for a theory should in some particular respect cover the whole of the facts under examination. Thus,

Young's undulatory theory of light is an interpretation, for certain purposes and to a certain degree, of the whole of the phenomena of light, so far as they were known to Young.

The Doctrine of Natural Selection is not in a similar position. For Natural Selection was not held by Darwin to be a fact operating over the whole field of evolution, but to be a factor, a working influence mingled with, or alternating with, other influences. Let us, then, call the facts pointed to under this name the selective elements in evolution, and let us call the doctrine of those facts the *Principle* of Natural Selection in the Evolution Theory. We distinguish, then, first, the general doctrine, or *Theory*, of Evolution from the special *Principle* of Natural Selection, which was Darwin's original contribution to that theory —a contribution, you will remember, which was independently offered by Wallace at the same time.

We made also a distinction with regard to the matter of faith in question ; a distinction between Theism, or the general belief in God, and Bible or Church Doctrine. It is perhaps almost the same distinction as that between natural and revealed religion. Taking this distinction, I ventured to suggest—I do not profess to have proved the point—that the general doctrine of evolution does not come into conflict with Theism

as such, though it may be thought, and indeed it has been thought, to be in conflict with Christianity. But the principle of Natural Selection may indeed seem to be in conflict with Theism because it seems to provide a method for the guidance of evolution which may be substituted for the directing power of God. It seems to some minds to complete a mechanical theory of the origination of the universe, because as, I think, Professor Karl Pearson says, it brings life within the range of a mechanical theory which, before Darwin, had to allow an exception in the case of life. Here we are plainly face to face with a number of opportunities for debate which I must only most briefly indicate, grouping them under two principal heads.

In the first place it may be questioned—and the question will range in various directions—whether the doctrine of Natural Selection does really thus complete a mechanical theory of the universe; and in the second place we may ask—and here, again, is a wide inquiry—whether a completed mechanical theory of the universe is in any true respect hostile to a rational Theism. But I pass from these questions, which plainly require very patient treatment, to indicate some further necessary distinctions in the scientific doctrine of Natural Selection itself.

On the scientific side of the matter the

following positions may be distinguished if we are to get anything like a full account of Natural Selection. Some, like Darwin himself, consider that this influence is one part—and the most important part—of the machinery by which specific differences, without distinguishing them from adaptations, in organic life have been reached.

Different views of Natural Selection.

Secondly. Others, like Weismann, hold that, granted certain data, Natural Selection *alone* is sufficient to account for the organic scene, that it may be made to cover all differences of living beings that exist.

Thirdly. These latter naturalists are in turn criticized by writers of whom for a time, and for the purpose of securing fuller discussion, Romanes made himself the leader, and who contend that the Doctrine of Selection is only an account of the origin of *adaptations*, and does not cover the whole range of specific differences. To identify this position with that of Darwin would be to beg the question in debate between them and such writers as Weismann and Lankester. It would also be to deny any special value to the distinction drawn between character and adaptation.

Fourthly. There are those who consider either that the secret causes of variation and the directive force of the environment account for the animal forms we see, or who are on other grounds

inclined to consider that the importance of Darwin's principle has been very much overestimated. Of these, perhaps the most important is Eimer, but he was preceded by several important American naturalists, among whom Cope is perhaps the best known. I have mentioned these points with a definite purpose, although it is not the purpose of examining the merits of the different views. Such a work would be out of place here, and I am anxious to make one point alone, namely, that we are not as Christians, that we are not as Theists, interested in the disparagement, or in the refutation, or in the retrenching of the doctrine of Darwinism. The question of the nature of evolution is far more complicated than it was in Darwin's time. We are more and more fully aware how small a part of the facts is at present within our reach, and the very advance of knowledge with regard to the accumulation of adaptations only shows us more clearly the great fact of variation, the more general facts of heredity itself, lying before us for an investigation which has hardly begun. In fact, those who most confidently accept the Darwinian principle as sound are, most of all men, obliged to acknowledge the largeness and the importance of the unexplained *facts* which constitute the necessary postulates of the system. For the purposes of a theological inquiry it is best, and indeed, when we are to consider the

relations between Natural Selection and Theism, it is the only possible course, to take the most favourable view of the certainty of Natural Selection and to give it in our minds the widest range which has ever been claimed for it. If there is in it something inconsistent with rational Theism, we should not, as Theists, be better off if we could drive this something into a corner, if we could show that it operated only within a narrow range; for a principle which is in its own nature inconsistent with belief in God is entirely destructive of our position, even if it emerges only quite exceptionally in the course of a long range of facts. Let us, therefore, grant it provisionally the widest conceivable range. Let us suppose, as I for my part wish that on scientific grounds we could securely suppose, that to discover the origin of adaptations would be to discover the origin of species; that all adaptations may be shown to have survived and been accumulated by means of the elimination of the unfit; that in this way the whole vast aggregate of organic forms, both plants and animals, and not excluding man, could be set theoretically in a series, so as to demonstrate the origin of each from some primitive and simple and undifferentiated form through chains of intermediate species. Suppose, that is to say, that the boldest aspiration of a system of evolutionary

For our purpose the greatest possible force allowed to Natural Selection.

biology were completely fulfilled, and fulfilled in such a way as to show that the directing force throughout had been that which is generalized under the term of "the survival of the fittest," or Natural Selection. But at this point, and before I take my next step, I must in some brief way illustrate the supposed nature of that process, and here is a task of the utmost difficulty, only increased by long familiarity with the idea to be expressed, a familiarity, no doubt, shared by many in this place.

What, in roughest outline, is the description of this supposed process? Perhaps we get at the matter best in the way along which Darwin was actually led towards his theory, by the consideration of the facts of variation under the culture of man.

What is Natural Selection?

We know that many varieties exist in each kind of domestic animals and of domestic plants; and that it is often alleged, and in some cases proved, that these varieties are in the case of each kind descended from a common and undifferentiated stock. How, Darwin asked himself, are the varieties established? Not, he thought—this description is a little one-sided—by direct influences being brought to bear upon the plant which it was desired to improve, but by taking advantage of a certain inherent quality in the unimproved stock. The plant or the pigeon—

and the matter is the same in either case—gives rise to a number of individuals like itself in the most important respects, but varying in respect of details—varying in size, in shade of colour, and in a multitude of other characters. The gardener or the fancier effects his improvements not by any direct influence upon these variations, but by selecting among them that which he prefers, by continually destroying all those which fall below a certain standard with respect to the feature which he desires to obtain. By keeping, to take a rough example, among his pigeons all those which show a large supply of white feathers, he eventually 'produces' a race of birds which is immensely different in aspect from that with which he started. His new specialized type has been obtained by a selective process of elimination carried on in the treatment of the highly varied offspring of his generalized type. Just such a process, Darwin conceived, we may trace in Nature itself. The fancier 'selects' his whitish pigeon by the destruction of the others, and so at last gets out his pure white stock. Even so Nature, by the pressure of necessity, by the race for food, by the difficulties of escape, by the decimations of flood and winter, may be said to select among the infinitely graduated variations of an unspecialized stock this or that specific point for preservation; this or that species to fit a

particular niche in the competitive world of animal life; this or that hardier wheat in the struggle of excessive vegetation. . . . But it is not our duty to-day to describe this famous doctrine. I must refer you to the great books which are devoted to its discussion, for no brief indication of it is satisfactory. Nevertheless, what I have said is fair, so far as it goes; it is fair because it is friendly; and enough has been said to indicate the general line of a doctrine which has met on the side of science with a perpetually increased delicacy of criticism, and which undoubtedly must go through many modifications, a long struggle for survival on its own part, before it reaches anything like a final and fixed form. I believe, however, that I have not left out of my description of it any quite vitally necessary element. It is a doctrine of the accumulation of variations through and by a sifting process of advantage and disadvantage in the perpetual race for life. It has for its root the notion and the fact of the excess multiplication of plants and animals, the notion and the fact that in the struggle to survive a result is produced which resembles the effect of a definite and purposeful choice. Whether or no such a doctrine as this is incompatible with the idea of God it is not now in place to say. I find it most difficult to catch, for my own part, any signs of such an

opposition, and Darwin himself, in one of the newly published letters, speaks in his almost always gentle and humble way in deprecation of any idea such as might be called the Deification of Natural Selection.[1] His vision, he says, of a purely mechanical process surely does not exclude the general laws of the universe under which alone any such play of competition could produce the particular effect which is actually produced.[2] For our present purpose I will indicate only two points with regard to this doctrine taken, as I have repeatedly said, at its largest and freest.

First, it was never offered as a theory to account for the fact of life. It does not account, as Darwin himself urged, either for the origin of life, or for the origin of its character and behaviour. It assumes life as its necessary basis; it is on the known facts of life that it rests its claim to be probable. Nothing in it has the smallest tendency, when rightly considered, to bridge the gulf, the great gulf, between life and no-life. Let me, before I further illustrate this point, interject the remark that I should not for my own part be content with any support of the Theistic position which was drawn from life alone in such a way as to suggest that in life we had evidence which is

Selection does not account for Life.

[1] *New Letters of Charles Darwin*, vol. i. p. 154 (ed. 1903).

[2] See on this point Baldwin's *Development and Evolution*, p. 232 (ed. 1902).

absent from the things without life. Nor, again, could I rest content with a theology which might be shaken by the discovery of some bridge of natural process linking the phenomena of crystal-growth to the phenomena of living substances. What it is, how much and how little, that such links effect for the explanation of the facts which they connect is a question hardly lying within the range either of Physics or Biology, and it is one which cannot now be discussed. But for those whose minds are disturbed by the suggestion that life has been in some sense explained by the principle of Natural Selection it is in point to say, as I have already said, that nothing in the Selectionist description of the behaviour of life accounts, or is entitled to account, in the slightest degree, for the existence of life itself; nor does it, as I have said, tend to bridge the gap, or even to narrow the gulf, that lies between life and all that is not life.[1]

Here we have to deal with a special source of confusion in thought. Men have traced lines of descent more or less successfully towards their source. They point to a very simple, highly unspecialized form of living substance as the

[1] From the point of view of a philosopher, the problem of the appearance of life itself is a special instance of the problem of the origin of variety or heterogeneity in general. But the *Biological* investigation of the origin of species presupposes living matter, and at first presupposed also the existence of variations.

common origin of all the animals and plants we see, and the question arises whether those who have travelled so far may not hope to take one more step? Surely if we can pass from the elephant to the protozoon, or, more boldly yet, from man and all that he is and does, to the unicellular organism, which is, after all, morphologically comparable to one of the cells which together constitute man's body,—surely after such a journey we may have courage, and we may hope for one more step, the step from the living jelly, which is so like a drop of oil, to the inorganic compound which, under certain conditions, so closely simulates the movements of the living jelly.

Now, here is a fallacy, which I wish I could disentangle. The thought which I have tried to describe contains in it the notion that we have somehow got away from the nearer links in reaching the more remote, that we have *passed* from the man or the horse to the moneron in such a way as to have wiped out the high and greatly specialized forms behind our backs. But this is a mere figure of speech. We have only arrived at the moneron, we have only traced our path back or down to it, by means of the facts which lie along the whole range of organized life; and we carry along with us in our thought the whole of that life. That is to say, in climbing down we have not rid ourselves of the need of the highest

links of the chain down which we climb. We are attempting a piece of injustice, which is a kind of inversion of that which is known as kicking away the ladder by which we climb. Here we try to kick away the ladder by which we descended, and we speak of the leap at the bottom as small in such a way as to forget that it would not have been small, but destructively deep, if it were not for all the links which lie above our head and which still form an absolutely inseparable part of the facts upon which alone we can proceed. Or, changing the figure, make it no ladder, but a rope, and our very sensations will warn us of the peril of losing its uppermost strands ; will tell us that it is not the end of rope between our hands, but the long line of rope by which it is attached to the solid beam, on which, at every point, and all along, we depend.

So if there existed, as no naturalist will say there does exist, a thinker so acute and so successful that he had traced his path all the way by secure steps down from the varied scene of mammalian existence to the formless but still living reality of the cell-like protozoon, he would not really have reduced the gulf to an easy leaping-space between non-life and lowest life, for he carries along with him in his very knowledge of the characteristics of protoplasm all the facts that go to the full description of

the entire varied scene of organic life. Or if you choose to put it otherwise, if indeed his process has been a process of reduction, so that he need only regard the quotient which he has arrived at, and not the great sum upon which he has operated with his divisors, yet even if this be granted, his resultant simplicity, his last term is shown by the very nature of such an argument to contain, in Tyndal's phrase, "the promise and the potency" of all the rest.

I take the risk which belongs to repetition in order to secure clearness for this point. By every new attempt at analysis, I repeat, organic life is made to disclose more grounds for wonder than before. It must be steadily contemplated as a whole, and nothing which has been proved, nothing which has been suggested, about its humble and simple origin, ought to hide from us the challenge which is constituted by that whole. This simple original form, this humble ancestor, is thought to be represented in the actual organic population by certain unicellular forms. These are, if I may so express the matter, the unprogressive, old-fashioned cousins living as the first ancestors lived, but in the society of other descendants of that ancestor who have departed very far and in many different directions from the primitive simplicity.

The wonder of life is in the whole of it.

Now, this contemporary simple form, and this

supposed ancestor of us all, have alike caused unreasonable disturbance in our minds. Something like the same disturbance, a touch of fear and shame, exists when, in the scale of merely social or conventional developement, a lowly forefather is found for a distinguished house. This powerful ruler, this gallant gentleman, this dame the flower of our refinement, are descended, and at no long remove, from a mechanic, a countryman, a poor lad of the romantic half-crown. The answer surely springs for recognition and use. What a wonderful lad, then, what a wonderful peasant, what a blacksmith or wheelwright was this! Simple as he stood a century or so ago among his comrades, he was, as Buonaparte said of himself, already an ancestor—ancestor of such gracious ladies, such noble knights. We have certainly no need to be ashamed of him, the founder of the house. We point for proof of his quality to the house he has founded.

About the lowly ancestors of living forms at large, my answer would run on somewhat the same lines. With regard to this humblest form—and he is immeasurably below the vertebrates, or that perhaps degenerate vertebrate the Ascidian, once called "ancestor of man"—with regard to this earliest living thing, we are in a dilemma, a happy dilemma, shutting us up on either hand to a hopeful conclusion.

Grant, first—and it is a bold concession—that the relation between the lowest protozoon and the mammal is a relation of time; that the one represents an *earlier* form than the other; that there has been in short a succession of forms on the earth, a succession such that the earlier linger on with the later arrivals.

Grant, further, that the succession is wholly one of descent; that the various forms are related to one another in kinship.

Then follows our dilemma. Either the progressive differentiation of the later, younger, more complicated forms has been wholly due to the original quality of the protozoon (of course, under the various stimulations and opportunities of the environment), or it has not. If it has not, then additional forces of life, forces of vigour, and forces to shape and qualify, have been introduced into the series of descent from outside the series. From whence? From whatever source they have come, to suppose them is to say very precisely that the variety of the organic population is *not* due to mere descent, accompanied by mechanical modification in correspondence with the environment; that another force has been at work; that the primitive form is not in any true sense an ancestor, but only the leading member of a file; finally, that in reaching by inquiry that simplest form we have not at all

A dilemma.

narrowed the description or lessened the wonder of life, for besides the slender thread we trace to that small beginning, there have been all along other powers introduced which elude our discovery, which command our wonder.

What is the other horn of the dilemma? If the descent has been indeed a descent, if no forces have been at work except such as were present in the earliest form, and required only the environment for their developement, then mark what follows. It follows that, instead of taking the undifferentiated jelly as explanation of the flocks and herds, of man with his society and the creations of his art, we have to take these as the explanation, as the large and manifested description, of the hidden potencies of the jelly.

In either case, we have not narrowed the stream, we have not lessened the bulk. We have not found the *answer* to the mystery of life, we have only read out more at length the great question that it is; read it so as to catch some of its first trembling whispers, but not so as to escape from its more immense and challenging notes.

Your stately civilization, your art, your prayer, says the Naturalist-Agnostic, these are no spiritual creation. They are but the last result of nervous reflexes which exist in essence in the simplest monad. Your life is nothing greater

than a speck of jelly *opened out*. And we reply: your jelly is nothing less than human society *folded up*.

That is our reply, on his own terms. We do not commit ourselves to his premiss, an unproved premiss, that it is only the unfolding of the jelly that goes to the result. But for one who rests on that premiss there is no escape from the wonder which is due to such a jelly. It is the whole scene of organic life, it is the whole range of life including man and all he may be, which in any case and on any showing constitutes the great question which we meet. There is life before you. What do you think of it? Do not answer by the cry, "See how small its smallest part is, and the whole is in the part."

It is, after all, then, with the whole range of life that we have to deal; and however interesting, however intensely valuable would be such a reduction as we have not yet seen, it would leave us as before, face to face with life as a great positive fact, with life in all its possibilities of variation—to deal with, to account for, do I say? Nay, to admire and to reverence, as the authentic manifestation of a creative mind.

But, secondly, not only does the Selection theory decline to account for the fact of life, requiring rather the deepest recognition of the fact; it does not even propose to account for

one special feature of living substance, namely, its tendency to variation. Here, at any rate, we are not face to face with something with which only metaphysics or theology can deal. We are confronted by something which is a proper subject for biological inquiry, and begins now to receive that inquiry in something like sufficient measure. I have pronounced once and again the name, perhaps some day to be so distinguished, of the Abbot, or more properly the Prelate, Mendel, made known in England by Mr. Bateson.[1]

Natural Selection does not account for variation.

If you know anything of Mendel's apparently most fruitful suggestions, you know he is dealing with a range of biological facts which Darwin was fain to take unexplained as the given postulate of his theory. Darwin assumed the infinite variation of living creatures. Some have challenged the very fact. Bateson has done a great deal to show that a continuous and minute variation does not prevail.[2] But be that as it may. The variation may be continuous and minute, or it may be, on the contrary, large and spasmodic, and proceed *per saltum*. In either case it remains a fact requiring its own

[1] *Mendel's Principles of Heredity*, by W. Bateson. Cambridge University Press, 1902.

[2] At any rate, he shows the existence of many cases of discontinuous variation. It may be convenient to add that the existence of Natural Selection does not depend upon the existence of continuous and minute variation.

biological explanation; and that explanation certainly cannot be derived from Natural Selection itself. For this seems to require for its application the existence of an infinite, or almost infinite, *capacity* and tendency to vary; and this is true, whether the *actual* variations are minute and continuous or occasional and large.

So far, our time this afternoon permits us to follow this subject, which has engaged some of the most acute thinkers for a large number of years, and will continue to engage the energy of many more. It is obvious that we can only touch it here. I hope that, only touching it, we have yet touched it to some effect. I hope that under the conditions here of necessity imposed upon us, I have done something of what can be done to show that on biological grounds alone—for it was my second point—Natural Selection is not an explanation of so much as the *procedure* of organic life; that it describes a process within a certain range by which variations, the origin of which is not by it accounted for, may have been accumulated. And besides, I hope that in my first point I was able to suggest that, supposing what of course, in fact, has not taken place, namely, that the process of explanation had gone to its utmost possible stretch, and that the entire scene of organic life could be arranged, for thought, in a series leading back and down to the simplest and most generalized

form of living matter, we should not thereby have made a step towards accounting for, still less towards eliminating, the wonder of organic life. We should only have shown that great positive fact as more intricately admirable than we had before suspected. We should see, indeed, the reign of law traceable to some degree within a region which was anciently thought to be outside it, but we should not thereby have been forced to take one step in the abandonment of that reverence for supreme creative power which finds its evidence partly in the outward scene, though it has, as I shall always hold, its primary supports in that interior consciousness of likeness to and of union with God which forms the centre and burning focus of man's self-recognition.

VII

THE BIBLE AND EVOLUTION

Recapitulation—A plausible case for opposition between Bible and Evolution—The opposition roughly stated—More than one kind of question is involved—We do not really judge the Bible from outside—Genesis should be compared not with modern biology, but with other ancient cosmogonies—The mythology of Teutonic races—The philosophy of Greece—Scepticism or Dualism—First leading thought of Genesis: Creation—The word translated 'Create'—A second leading thought of Genesis: Change—A third point: the unity of living with inanimate nature—Fourth point: the unity of man with nature—The presence in man of an element beyond nature—Does Science forbid the statement that man is complex?—No revolution in thought has taken place—Recapitulation—The Bible gives truth in a form credible through many ages.

"And the Lord said unto me, In the beginning, when the earth was made, before the outgoings of the world were fixed, or ever the gatherings of the winds blew, before the voices of the thunder sounded, and before the flashes of the lightning shone, or ever the foundations of paradise were laid, before the fair flowers were seen, . . . and or ever the imaginations of them that now sin were estranged . . . then did I consider these things, and they were all made through me alone, and through none other."—2 Esdras vi. 1–6 (R.V.).

In earlier addresses an effort was made to distinguish two different pairs of supposed incompatible terms in thought. In each case we desire to show that the contrasted terms are not really incompatible with one

Recapitulation.

another. But as a preliminary, it is important to make each pair stand clear of the other, so that the supposed conflict may be definite and apparently serious.

In the part of scientific doctrine which we are considering we distinguish between the conception of *Evolution* in general and that of *Natural Selection* in particular. In religious doctrine we distinguish between *Theism* (or natural religion) in general and *Christian belief* in particular ; or, to give the matter what may appear at first sight a wider scope, between Theism and Bible Doctrine.

It is no part of our present business to ask whether for us there can be a Bible Doctrine which is not Christian, and how far we are bound, as Christians, to certain views of the nature of the Bible and of its contents. It is enough to point in general terms to the fact that to defend Theism in the abstract is not sufficiently to defend Christianity, or to relieve the believers in the Bible of the charge of neglecting or affronting the teachings of science.

Further, we paired our opposites in this manner. We said that with abstract Theism it was difficult to bring Evolution as such into collision, if Evolution is stated in general terms and without definition of its mode of action. With Theism *Natural Selection* must be paired as a possible opponent, since it describes a *mode* of

Evolution which may conceivably, or at least in argument, be set in contrast with the Theistic conception of the world's nature and origin.

But with Bible doctrine it is still possible that even Evolution in general is in conflict. For evidently it is one thing to show that belief in God in general escapes a certain opposition, and a different thing to show that a particular doctrine of God which (on the whole and in variously growing clearness) is displayed in the books of the Bible is free (at any rate in the same degree) from the same opposition.

A *particular* doctrine of Evolution might be in conflict with the most general and the most generous Theism. A *particular* doctrine about God may be in conflict with the most general and most generous scheme of Evolution.

Under the title, therefore, of the present lecture, we are to raise this question of the compatibility of the Bible and Evolution.

Now, when we come to the Bible, to revealed religion, to positive theology, it may be admitted that there is *primâ facie* an opposition between some of our sources of doctrine and some of the lessons of science. And for an example of such an opposition *primâ facie* I take one which has been very generally made the subject of consideration ; the contrast between the teaching of *Genesis*

A plausible case for opposition between Bible and Evolution.

and the teaching of natural history with regard to the past of the planet we live in and of its living inhabitants. Here, those who have given up hope of war upon other grounds take heart once more, and expect relief from the weariness of peace. Here, it is urged, the contradiction of the two teachings is too glaring to be managed or disguised.

The opposition roughly stated.

The doctrine of the Bible and the Church (we are asked to admit) is that at a particular point of time God made the world; that He peopled it in a few days with various forms of life, and finally made man separately in His image; nor is there much to quarrel with in such a statement of our faith. But science, on the other hand, it is urged, shows that the earth is the result of long developement, and that all the forms of life have appeared according to natural laws, that they have arisen in succession from some generalized forms of existence by the operation of forces not different from those which we see in action in the world to-day.

Is it not in the contrast between continuous succession and abrupt change that we find by far the most trenchant point of difference? Religion is supposed to teach that there was a definite moment when 'creation' came to an end; and science, on the other hand, is held to

show that there has been no such catastrophe, or climax, or cessation of change. It is urged that, in respect of geology, we are now—or were for a long time after the teaching of Lyell—less inclined to believe in catastrophic change, more inclined to believe that the earth has its present form on account of the operation of the same powers which we see actually at work, as water and wind and so forth. And, correspondingly, in the larger question of the origin of all things, the anti-catastrophic view is prominent. And, indeed, it is here that we shall find our point of debate in certain minds. For science does indeed declare that the causes which have brought into their present shape the existing forms of life, just as truly as the shape of the earth's crust upon which they move, are forces of the same character as those which are still operating round about us. Here, then, we may formulate the supposed difference. "Science teaches a continuous and still continuing process; the Bible a 'making' finished long ago." These words, I hope, put the position in a fairly extreme form; but I admit that my own difficulty in these questions will always be to go back in imagination to the state of mind in which these contrasts were trenchant, so as to be able to propose them in sufficiently harsh language.

Now, with our Bibles in our hands, what have we to say to this supposed contradiction? I

think we shall be wise if we begin by making the note that the question by which we are confronted is a complicated or compound question—a question which is not simply one of those which are common to Religion and Science; for here we have *also* to do with a question which belongs to the inward domestic debates of Religion itself. We have a question, that is to say, about the relation between the Book of Genesis and Religion, as well as a question about the relation between the Book of Genesis and Science. With the relation between the Book of Genesis and Religion I have nothing to do here. That is a question for theological discussion, by which men are to show what is the function of the Bible in the whole scheme of religion. Let us retire from it respectfully, remembering that there is a great work still in progress which, although at some particular moment it may produce results which are unwelcome to some believers, will undoubtedly in the end strengthen and clear our faith. The truth will certainly prevail. And just as in respect of the Gospels, whatever may for a time be advanced by a few teachers, the Christian general mind is now greatly reassured concerning the integrity of these records, and the integrity and authenticity of the whole New Testament, so it will undoubtedly be with regard to the Old Testament also. We are

More than one kind of question is involved.

passing through a time of some intellectual strain, but the end is certain to be a gain of light to all those who love light. But all this we put on one side ; and for our present purpose it will be our wisdom to accept uncritically such an account of our relation to the letter of Scripture as would be proposed by an adversary. In considering our relations with Natural Science, we put at its outside value the force of the principle of Natural Selection, and regarded Science as if it were wholly committed to that principle ; and this, of course, is to go beyond the facts. In the same spirit, when we turn to our religious documents, let us put their difficulty at its outside value. This is a reasonable course ; for if we can carry along with us this book clothed, as it has been, partly by artificial efforts, in difficulties of the most extreme kind, all the more certainly shall we be able to defend our use of the same Book, under the interpretation of a sane and rational Christianity.

One further note may be added by way of preface. It is to be remembered that we are not in a position to estimate, I do not say the value of this sacred teaching, but even the value of its effect upon *ourselves ;* and for this reason, that it has steadily impregnated our thinking, not only during the whole extent of our individual lives, but also

We do not really judge the Bible from outside.

during the many Christian generations which went before us. We have been born into a society which, however much it may have been persuaded to suspect the teaching of the Bible, is living upon the intellectual fruits of the Bible. Just as truly as we are in a society which rests upon the *moral* fruits of the Bible which it sometimes disparages, so also are we living in a society which enjoys the *intellectual* fruits of this teaching. We profit by a priceless education of the mind by dogma. But we are unaware of this advantage, because we have never during conscious life occupied that mental position which is excluded by the Bible teaching.

Genesis should be compared not with modern biology, but with other ancient cosmogonies.

Further, we are accustomed to compare the teaching of Genesis with the latest statements of biological science. A memorable debate in the *Times* some years ago, between Mr. Huxley and the Duke of Argyll, illustrated this tendency. The debate turned upon the place to be assigned to the Lacertilia[1] in the animal series. The latest teaching of science upon this head was put in contrast with what the Book of Genesis is supposed to have said about the "creeping things." Mr. Huxley compared the statements of the Book of Genesis with the results of palæontology and comparative anatomy, as if the ancient

[1] Lacertilia are lizards, and animals like them.

Scriptures were to be judged by the measure in which they reached the systematic exactness of a modern book of zoology. But is this a reasonable comparison ?

What ought we to compare the Bible to in order that we may get a glimpse of its true value ? Surely in regard to such questions we ought first to set it side by side with other ancient cosmogonies, with descriptions which have been made from time to time by the human mind of the origin of the world. There are some who think that such a comparison is destined to abolish our reverence for the Bible narrative. Experience, on the contrary, makes it probable that it will greatly increase our sense of the true value of the Bible ; and this, I think, one may be allowed to conjecture, who is not qualified to compare our Scriptures in anything like detail, or even in the most general way, with the great Eastern mythologies which were given to English readers by Max Müller, or with the newly recovered Babylonian teachings to which the Bible is said, especially by Professor Delitzsch, to owe so much. But we might all follow with some intelligence a comparison of the Bible story of creation with the myths of Greece, some of which most of us learned in our childhood, or with the cosmogonies of our own ancestors, the ancient stories of the Scandinavian races from

which we ourselves in part spring, and to which it seems probable that we may have by mental constitution the readiest actual access in sympathy and understanding.

The mythology of Teutonic races.

It is quite possible that the value of a comparison in this direction has been to some considerable extent overlooked. For it may well be argued that, if we wish to measure our northern debt to the Bible by estimate of what, without the Bible, we northerners should have thought of the world, we ought to consider the native impressions, the conjectures and beliefs which actually filled the minds of our blood-ancestors. Look at the wonderfully poetic myths of Scandinavia, and you will see there nothing approaching to a doctrine of God ; you will see a crowd of larger and more or less supernatural beings like ourselves, occupying a scene which can be readily recognized. Götterdammerung, the Twilight of the Gods, is nothing but a heightened version of those regions of the North, where the sun for a long time in the year does not come above the horizon. These mythologies represent nothing but the conviction of the people that, as a race, they came from a distant cradle ; and those whom in our interpretation of the stories we call the gods, as Thor and Odin—Odin, or Wotan, from whom our own king is lineally descended—these are

nothing but earlier members of the same race clothed in a majesty more than human. What was meant, I suppose, in the sixth century by saying that Egbert, of whom our king is the present representative, was descended from the hero who gives his name to Wednesday, was simply that already in the sixth century his ancestry, in the language of the old editions of Burke, was "lost in the mists of antiquity," and the nation had no knowledge of itself but under the leadership of his race. It means nothing less and nothing more; only the mists are more wondrous and romantic than ours. This language does not attach to the name anything properly comparable to our belief in God. What you see in these stories is a society of larger Norsemen—Baldur, Odin, Freya, and the rest. And the stories of their effect upon Nature are simply the exaggeration of a childish mind. The legend that this or the other god of the Norsemen, when he threw his hammer, could break the mountains, carries with it no doctrine of the origin of the world in which they lived, and in which they were as much enclosed as was the man who sang their stories. We have here no interpretation of the world as such; we have simply a second imaginative peopling of the same scene by men of a larger growth.[1]

[1] What is true in respect of the cosmology is true still more

When we open our Bibles, then, let us note the sane, quiet, steady account which we find there without one word which gives an opening, or with scarcely one word in it which, considered by itself, gives an opening to mere incredulity. And let us compare this with the stories which have occupied the minds of mankind outside the circle of Israel, with the stories of aimless miracle or of bizarre symbolism, which fill the religious myths of the peoples. Put your Bible side by side with these, and not with the latest result of geological research, and you will be amazed at the simplicity, scientific plainness, and verbal clearness which belongs to the Semitic narrative which our distant northern race has learned to reverence.

And now, in the second place, set your Bible alongside of another great mental reality which balances the mythologies of the East or of the North—I mean the philosophy of Greece.

evidently of the ethics of Holy Scripture. To begin to measure what we of the North have gained in this respect, consider the character of the Odin (Woden, Wotan) of our ancestral reverence, the Father of gods and men; and that not only in respect of human frailties mistaken for robustness, and naturally prominent in a robust and high-fed poetry, but also in respect of much more fundamental and less complexional qualities, of shifty purpose and vanity and revenge.

The same contrast does not hold good in anything like the same degree between the Bible and *Chaldaean* religious writings, of which the Prayer of Nebuchadnezzar in the *India-House Inscription* is a very well-known example.

In Greece, thought was in its active stages largely separated from religion. It had little or nothing to do with the myths of the people, excepting when, as so brilliantly in Plato,[1] those myths, or myths like them, are used in a special manner to give utterance to a thought which would otherwise have escaped the philosopher. But whatever be the function of adopted or original myths in the practice of Plato the seer, we may confidently say that the popular ideal histories of the past are not relied upon in the schools of Greek philosophy as affording any clue to the origin of the world. What, then, do we find in Greek systematic thought? We find it perpetually haunted by the difficulty, not of explaining, but of formulating any connexion between God and the world at all. Plato is the thinker who adventured furthest in the pursuit of such a formula. And yet, as his great disciple and critic Aristotle declares, the main weakness of his system lies precisely in the lack of it, in his failure to suggest the nature or possibility of a dynamic relation between the idea and the world; between what Plato calls "the same and the other." What does this mean? It means that the notion of *creation*

The philosophy of Greece.

[1] A vast exception indeed. Plato stands wholly apart, or rather he stands in the small and high company of those through whom knowledge comes to man. On 'Plato the Seer,' see Professor Stewart's great work, *The Myths of Plato* (London: Macmillan, 1905).

is one which had not dawned upon the ancient Greek mind. We are so accustomed to this idea—which implies that God and the world are both, though not alike, 'real,' and that God made the world—that we take it without examination as a matter of universal knowledge. Let me remind those who know the past history of thought that the very notion of creation is never securely attained in the thought of Greece. Instead, you are in that thought confronted with these alternatives. Either the world of phenomena is strictly unreal, or else the world, the universe, the matter which we see is itself, and as we see it, conceived as eternal, even as God is eternal. There are in Plato's words "the one and the other"—this world and the world of ideas, which somehow or other is its original, and which may, in some minds, approach to the notion of God. But the two realities stand side by side unconnected, equally eternal. This is a system of strict dualism, which, whimsically enough, it has pleased that great thinker Haeckel to attribute to Christian teachers of all people in the world, but not without this measure of excuse that some Christians have allowed him, and those who think with him, to monopolize the word 'monism,' which belongs to all reasonable thought alike. For no thought can be content to acknowledge two fundamental realities, both of them equally eternal. That is

Scepticism or Dualism.

the position in which Greek thought finds itself, with an eternal God and an eternal world. The only other position which was possible to ancient thought was one which involved the unreality of the world. In this way, indeed, they reached a monistic thought and an idea of one reality, the reality of God, or of spirit ; but only by denying reality to all the rest of our experience. The alternative seems to be dualism or scepticism, scepticism with regard to the 'not ourselves,' which is also not God.

First leading thought of Genesis : Creation.

Reflexion upon this alternative enables us to perceive the immense value of the apparently simple thought of *creation* which stands at the head of our Bible. By this thought we secure, on the one hand, a belief in the relative reality of the external world, but, on the other hand, we secure the unity of our thought, for we describe the external not as eternal, but as having proceeded by the will of the Eternal out of nothing into being. Or, in a closer method of speech, it is in its measure and according to its reality a pouring forth of the one Eternal Spirit Himself, Who has called it into being and put it over against Himself, so that He bestows upon it genuine reality, but such a reality as is not co-eternal with Himself. This notion of creation, which is woven in the texture of all modern thought, believing and unbelieving alike, which is

the common furniture of all our minds, was once an original visitant to the minds of the people of the West and of the North. It came to us from the East, this proclamation that there is but one Eternal, that is God; but that the one Eternal has called forth or thrust forth from Himself a true reality which we call the world. This is exactly one of those accustomed thoughts for which we are not grateful, but which distinguish the Bible narrative from all other narratives of the same kind. "In the beginning God *created* the heaven and the earth." He gave it true reality by His own will, remaining ever in Himself the only fountain of being, and abiding still the eternal One which He was before. This is in point of fact the element in Genesis which inspired thought lays hold of and emphasizes. "Where wast thou"—it is the Divine question to Job —"when I *laid the foundations* of the earth?" And the Psalmist chaunts, "By the word of the Lord were the heavens *made*, all the hosts of them by the breath of His mouth. He gathereth the waters of the sea together as an heap, He layeth up the deep in storehouses." "God by His understanding *made* the heavens, He brought forth the earth above the waters." That was the truth upon which the sequence of religious thought in the great line of those who worship the one God laid its stress—this statement

of creation, which in our reading of Genesis we sometimes pass over as if it were matter of course, not observing that in this word we have a force to liberate our thought from the helpless dualism of Greece, and from the grandiose, but often grotesque, mythologies of the North and East, which never answer, which do not even ask, the question how the world came to be, but merely read to us an earlier chapter, a remote, wondrous, magical, unlikely chapter of the phenomenal existence which we know.

The word translated 'Create.'

Now, this word "creation" occurs in the first verse of Genesis, and then not again, excepting in a few particular places, to which I will draw your attention. It appears in the first verse, "In the beginning God created the heaven and the earth," that mass of things which we see; and then in the twenty-first verse we read, "God created the great sea monsters." Why this indication of one particular kind of the inhabitants of the earth? I conceive because to the early days of human thought, when men were struck with wonder at strange and large things, there was a constant danger that they might suppose that something *in* the world was the *original* or fundamental part of the world, or even the thing which was outside the mystery of creation, and itself the cause of it. Here and there in different nations men have fixed on this or that thing as, so to

speak, the *root* of the world ; some mountain which was God, some stream of ocean which was the Serpent of Eternity. And accordingly in the presence of these great monsters, which seemed almost supernatural, the sacred poet finds it worth while to say, Yes, that also owes its being, not only its structure and its form (as I shall show presently), but its *existence* to the Almighty ; it is included in my former word, "the heaven and the earth." God also created the great sea monsters.

The third place of this word's occurrence is that in which the prophet speaks of man. There also, as one plainly sees, an exception might be supposed. Those who already knew that man was made in the image of God, might suppose that while the world of matter in which he lived came from God's hands, there was some difference between his relation to God and that of the world. And therefore the prophet declares that, in respect of existence, the fundamental relation of man to God is the same as the relation of the dust to God. If the dust owes its existence to God, man also owes his existence to God. God *created* the heaven and the earth ; God *created* the great sea monsters ; God *created* man. That is the first great truth written in this book, that the things which we see proceed from God's creation ; that they are not, as we now see them, eternal, nor yet, as some of the

schools of Greek thought supposed, formed by God out of a pre-existing material or ὕλη, as it was called, found ready to His hands. In neither sense was this world eternal, neither as we now see it nor in some earlier formless mode of existence. Its whole being, first and now and last, is due to the *fiat* of God.

What is the second point in this book of Genesis? What we read is that the matter which God called into being, the heaven and the earth, *passed through changes* after He had called it into being. It was first waste and void and dark, and the Spirit of God moved upon it; light appeared, and the division of light and darkness; and the heavenly bodies and the waters and the dry land. And presently arose the forms of life of different kinds; first the vegetable, then the aquatic forms in the water, finally the land animals, and, last of all, man. What is the meaning of this history? Taking it generally and in one view, it means this: that the matter which God called into existence by His Will, within the bounds of its own existence, within the history of its own being, has passed through many and important changes—changes, moreover, which have resulted in variety and distinction in a scene originally uniform. The studious modern is reminded of the authoritative expression of Spencer—unstable homogeneity

A second leading thought of Genesis: Change.

giving place to stable heterogeneity. In contrast to this sacred account, you might put two alternative theories; either, as I have already said to a wearisome extent, that the whole scheme always existed as it is, before any act of God, or that the whole was called into existence by God at once, just as it now appears. In contrast to this last statement, the Bible teaches that the world was not called into existence by God just as it now appears, but that after He had caused it to come into existence, He also caused it to pass through manifold *changes*, which are described after the figure or symbol of six successive periods of time called 'days.' The rehearsal of the days is to be read in a general sense, and it gives us this most valuable thought; that the world of material being which God has called into existence has, *within its own material history*, passed through many and most important changes, and from a formless state has come into the state which we now see. Is that statement inconsistent with natural history? Is it not rather a statement at which we stand astonished because of the extraordinary degree of its fundamental harmony with the best results of our independent thought? Contrast it in this respect with all the other cosmogonies known to us. The world, our Scriptures teach us, has passed through manifold forms; surely this is as much as to say that

it has been the subject of an evolutionary process.

What shall we take as a third point? The third point which stands clearly on the face of the record in Genesis is that in this world of manifold changes, and which has reached its present state after a process which we should call evolution, the living beings which inhabit it form, and have always formed, one reality and one whole with the inanimate scene; that they were formed of the dust of the earth; that the waters brought them forth; that the earth brought forth the living creatures each after its kind, cattle and creeping things and beasts of the earth after their kind; that the vast living population which we see is not, so to speak, like some stock put into a farm from outside, but is, in all its constituents, part of the one reality of the material world. Now, if you will compare this statement with some Eastern stories, you will see how in them this or that power is said to have put its various denizens into the world as if from outside. The Bible stands conspicuous in describing them as the result of what is fitly called a productive energy, a "bringing forth" of the water and of the earth, that is, of the elements which we still see around us. Instead, therefore, of the Bible binding us to some mechanical doctrine such as that which

A third point: The unity of living with inanimate nature.

we read rightly enough in poetry, in Milton, this notion of the origin of living things is, as I said before in respect of evolution in general, in a surprising and wonderful harmony with the present results of our thought.

Fourth point: The unity of man with nature.

Further, if the world is shown as the result of progressive change, as it is in Genesis, if the whole of the populations of the world, plant and animal, are shown as being parts of the same reality, brought forth by the elements upon which they live by the power of God and at the command of His word, we may go one step further and say that man is described as being also, on one side of his being, a part of the same reality. God, we read, formed man of the dust of the ground. God is said to have made the other creatures out of the matter which He had called into existence. With regard to man, He is said to have "moulded him." We have here a fresh word. There are three words—words which are translated "create," "make," and "form"; all of them repeated in one passage in Isaiah: "I have created thee, I have formed thee, yea, I have made thee." This word "moulding," or "forming," puts the man on one side of his being in a line with all the other living creatures. That is to say, he has not, on one side of his being, an origin fundamentally

different from theirs. He also is a production of the earth on which he lives.

But, then, Genesis goes on to teach us that, besides this nature of his which is of the earth, which is moulded by God out of the dust of the ground, man possesses something else. He possesses an inward power which constitutes his likeness to God—"God breathed into his nostrils the breath of life, and man became a living soul." We must not attempt here to examine the Christian doctrine of the constitution of man, for this is a subject by itself. It is enough if we can accept the statement of the Bible that, on the one hand, man is part of the same reality as the other living creatures, formed out of the same material, lying in *series* with them, and, like them fundamentally, part of that material universe which God in the beginning called into existence; but that, on the other hand, there is in him a different element, an element of a heavenly nature, an element by virtue of which he is a visitant upon the earth of which he is, on the other side of his nature, a part.

The presence in man of an element beyond nature.

Now, have we here a statement which conflicts with anything which science is in a position to show? If any man speaking in the name of science were to allege that there is no such other side of man, he would be simply going beyond any

Does Science forbid the statement that man is complex?

position which can possibly be established by proof, and he would be throwing himself into direct collision, not with this or that dogmatic religion, but with the most enduring and the most lasting convictions of every single consciousness. It would be indeed a very serious thing if this were so ; a very serious difficulty, that is to say, for science. For if it could be shown that natural science was committed to a position which would make it impossible for those who would follow science to believe in the spiritual nature of man, then I conceive that the same kind of answer must be given as that which Stephenson gave when he was asked whether it would not be a very serious thing if a cow were to stroll in front of one of his new locomotive engines. You will remember his answer, "It would indeed be a most serious thing—for the cow." I think we may say that, if it is true that science is committed, which it is not, to any such disparagement of the spiritual nature of man, then indeed it would be a most serious position of affairs for the present and for the future of science as an auxiliary to speculation ; and we must in that case make ourselves ready for a period of scientific retreat. Physics and biology, from moving as the masterful allies of philosophy, must sink back to the old work of bare scrutiny and description, even if they are not reduced to simple labour

in the service of commerce and locomotion. For all their wider inquiries would certainly perish if they drove full steam ahead on the rocks of the deepest and most unshakable convictions of all sensible men. I think it is plain that we cannot quarrel with the Bible because it bears witness to the complex nature of man. On the contrary, we find here something which precisely matches our daily experience. And, on the other hand, there is nothing in the teaching of science in regard to the lower kinships of man which need offend us as religious people.

The position, in fact, is not so new as we have supposed. We have all along been aware in our own individual lives from childhood that we had kinship with, that we had something which belonged to, the *material* world, and something which belonged to the *animal* world. We were warned not to allow ourselves to go down towards the beast, by following the impulses of mere hunger and anger and the like, which we share with the animal part of creation. We have always known that; and mankind all along has known the same story. It was known that man on one side was linked to the material world, formed part of it; dust he was and unto dust he should return, and he lay in series with the rest of the living inhabitants of that world, and was indeed an animal like them. Now, we have

No revolution in thought has taken place.

different conceptions of the relations of animals to one another. We have introduced the idea of their kinship by descent. We see them as a family; and therefore the man who has always been regarded as like them, in one sense, must now also be recognized as belonging with them to one family. But the new thought is not fundamentally different from the old; and it ought not to distract us from the other side of the truth concerning man, that man is in himself a mystery, being, on the one hand, something quite readily explained physiologically, one of the mammalia, one of the quadrupeds, having all the qualities which belong to other quadrupeds; and, on the other hand, having something which was totally different not only from all the other quadrupeds, but from the whole world, the whole material existence to which he belongs, and which, nevertheless, he looks upon as though from outside.

Recapitulation.

We have gathered some points in which the Bible at least foreshadows the surest and some of the most prominent elements of modern thought. It excludes the two extremes of dualism and of scepticism. The reality of the world is asserted, while the thought is excluded of its co-eternity with God. We have the wonderful conception of creation, which, while we cannot give it definition or expression, acts like a

magic in our minds and enables us to believe at one moment in the twofold reality of God and the world, and yet to know that they are at root but one reality, that the spiritual reality which is God has brought forth by His own Will that material reality to which, for a time, He has given a measure, as it were, of His own permanence. In the second place, the Bible teaches us that this world which God calls into being has passed through many changes within the history of time. Thirdly, it teaches us that its living population is not fundamentally separate from the crust of its hills or the water of its seas, but is brought forth by the water and by the earth. Fourthly, it allows us to put along with those other living inhabitants men themselves, on their material and on their animal side. And lastly, it goes on to teach us what is the origin of that other and mysterious life which we also possess, the life of communion, kinship, likeness to God, the image of God within us; that image which is, on the one hand, the power of reason, to contemplate and to speak about the world in which He puts us, and, on the other hand, the power of virtue, the possession of will, by which we may choose that which is good, and reject that which is evil.

We must defer to another time any consideration of the special difficulties which have been found in the Bible history; of the fall

of man and that which lies behind it, the great and terrible question of the possibility and meaning of evil. I have endeavoured to-day to suggest that if there is in some minds a great discrepancy between the sound conclusions of scientific inquiry and the sense of the Bible, these difficulties are largely such as belong of necessity to two different forms of language employed about one set of facts. And, in conclusion, I would beg you to consider that, in spite of these strictly inevitable difficulties, the Bible not only remains credible, so that we can understand it and read it as harmonizing with the facts which we imperfectly apprehend at the present day, but that it has been so through many ages and to many different generations of men.

The Bible gives truth in a form credible through many ages.

How wonderful a fact is this! how much beyond the power of man to frame a statement which should be at once credible to those wanderers of Israel who first perhaps heard this story, and credible to us to-day! It might be easy to write a Genesis which should correspond more closely to what we think we know about the origin of the heavenly bodies, which would bring in clear references to the nebular hypothesis [1]

[1] The Bible account of the appearance of light preceding the formation of the heavenly bodies is easily credible to us who have learnt the same sequence from the nebular-developement doctrine of

which is somewhat on its trial, I understand, in the schools of astronomy, but which, of course, recovers the vigour of its first youth in the publications of the Rationalist Press. How easy it would be to frame a Bible with a sort of Bible tone about it, but containing all our modern catch-words, showing man as the result of modification by descent, and so forth. But who would have believed such a story a hundred years ago? Who would have believed it when first these prophetic scenes were put before the people of Israel? Or, to put a simpler and still more familiar case. If Moses had announced that the earth went round the sun, would not his contemporary critics have stepped to their tent doors and triumphantly refuted the statement by the plain evidence of their senses, which report that, day by day, the sun rises from the eastern, and in due course sinks below the western horizon? Would it not have been said it was an attempt to blind the eyes of the faithful? It is not a simple matter, even at a given moment and for the moment, to say what is at once true and credible. Credulity causes many things to be believed which are not true; and suspicion or ignorance causes some things which are true to be disbelieved. It is, in fact, the very problem of

Physical science. It was also credible to early Israel. But this would not have been so if the ancient document had described the sequence in modern language.

utterance to find a description of reality which shall penetrate to assent, and to say what is believed without leaving a false impression. But the difficulty is vastly increased when the statement of truth is to remain credible to more than one generation. It would be impossible now for us to speak in language which should be credible to those who thought *The Vestiges of Creation* a scientific book ; and probably, if any of us are destined to be alive fifty years hence, we shall meet with new doctrines of science which are as unintelligible to us as those of the old days are becoming. What a revelation has to do, what a lasting statement of the relation between God and the world has to achieve, is to speak in general terms of the deepest part of the truth, to illustrate that truth by some forms of speech which may remain not only true but also credible through all the diversities of intelligence which belong to different times and to different classes of men. That is exactly what our Book has done. And I believe that, if you consider this fact more fully (as you will find it illustrated in Mr. Gladstone's book, *The Impregnable Rock of Holy Scripture*), you will conclude that a great deal of weight is to be given to it ; and instead of considering Genesis as a series of rash statements which it is impossible for a modern scientific reader to retain in his belief, you will see in it the most wonderful

example of a general and devout, poetic but inspired, description, in historical or narrative form, of the world we live in and of ourselves who inhabit it; and you will acknowledge with thankfulness the wonderful way in which these simple poetic utterances steer the mind through various snares which have swallowed up generations of acute thinkers in former days; how they guard us from polytheism, from pantheism, from dualism, and yet equally exclude that denial of all reality to the world which has been the refuge of so many devout minds.

An attitude of apology, in the English sense of the word, is not what is justified by a deliberate review of the early chapters of Genesis. The followers of science should rather make a bold claim for them as containing the foundations of the only religious system which can support a robust and genuine natural philosophy.[1]

[1] I venture here to refer to a single passage (pp. 109–111) of *Religion and Science* (Longmans), in which several important considerations about the Bible and modern thought are very briefly indicated.

VIII

BIOLOGY AND OUR VIEW OF HUMAN NATURE

Omission not oblivion—The defence of scientific anthropology at the bar of Faith—I. Biological doctrine of the origin of man. The position not really new—In the analysis of man the positive nobility does not become insignificant—And, besides analysis, we had a brief historical view—The nature of a thing is determined by its perfect developement—We have now a long history in place of the analysis of inspection—But this affords no reason for parting with our knowledge of what man *is*—II. Natural Law in Human Life—Law and Freedom do not vary inversely —III. Mental Physiology—Physiology is not a substitute for Psychology—What is memory ?—IV. The direct effect of scientific studies upon spiritual appreciation—Selective attention —As we cannot avoid or correct it, we must *allow for* selective attention in our view of life—The absorbing character of Biology—Charles Darwin.

"Behold, even the moon hath no brightness, and the stars are not pure in His sight : how much less man, that is a worm ! And the son of man, which is a worm !"—Job xxv. 5, 6 (R.V.).

Omission not oblivion.

We come near the end of our conferences with a strong sense of regret that so little ground has been opened, and that in those matters which have been touched, we have seemed able to make so small a selection of points. Silence must not be taken as proof

of a complete want of appreciation of the many connected topics and lines of thought which have been left without mention. Of these the most important is the study of the transition from the general Theism which we have been attempting to illustrate, to the heights and depths of the Christian Creed and Life. To show this transition is the great task of our time. But during this particular course of addresses we cannot, however humbly, contribute to it except so far as in the next lecture, which will be the last, we may be able to suggest certain heads of procedure. But of the questions which lie closer to Natural Science, the most difficult, and in some respects the most painful, is the question of the place and dignity of Human Nature.

The defence of scientific anthropology at the bar of Faith.

In order to set a few thoughts on this head in a convenient order, one may, in the first place, speak as if in justification of the modern doctrines of science at the bar of Christian opinion. That is to say, one may attempt to show to believers that there is less which is intolerable than we are sometimes inclined to think in the suggestions of Natural Science in this matter. And in the second place, one may endeavour to defend our real position against what is actually dangerous in the Naturalist attack. Here, as always, we use the words 'Naturalist' and 'Naturalistic,' not

in their scientific application, but to indicate that philosophic doctrine which, to speak briefly and roughly, attempts to make Science do the work of Faith as well as its own, and to exclude from the number of those things which may fairly affect our view of reality all considerations which do not fall under the definition of natural inquiry.

Now, if we are to make a case before Christians for much of the teaching of Science, we must assume that the Christian who judges is possessed of real convictions. Indeed, the whole work of defining the relations of Science to Religion is of very little value for a Christian who has not found the *positive* grounds of belief in his own soul and of belief in God. Unless he is standing firm upon a real experience of faith, justified and verified by its own proper tests (tests which we cannot here deal with, but which are continually illustrated in the regular teaching of the Church), he approaches all questions of relation in a nervous spirit, which very easily becomes a spirit of alarm and hostility. He is jealous of every approach of criticism, and flings himself, as in the panic of dreams, into terrified attack upon the opposite side. Our faith, if it is a real faith, does not depend (as I fear I must have said before in the course of these addresses) upon the gathering of many particulars of proof out of the world of sense-experience. It is not

to be shaken by the explanation of activities of nature which were formerly considered *especially* mysterious ; for it never rested upon any supposed fault in the universality of law. It would not be shaken if the gulf which lies for thought between organic and inorganic matter were for thought to be bridged ; for it has never rested upon this or any other interval.[1] It would not be shaken if

[1] While these pages are in the press comes (June 20, 1905) the news of Mr. Burke's observations of the behaviour of sterilized *bouillon* when it is shut up in a tube containing radium. These observations may well in time prove to have marked a most eventful step in discovery.

Meanwhile an able and thoughtful writer in the *Daily Chronicle* says of the minute bodies detected by Mr. Burke, "In a word, they are alive ;" and adds, "It is impossible to resist the conclusion that he (Mr. Burke) has demonstrated the evolution of living matter from lifeless matter."

That is our difficulty. Conclusions are what some of us cannot resist. They are so very attractive. A clergyman, learning to ride a bicycle under the tuition of a boy of fifteen, pleaded that he could not remember to use the brake. "Oh, but in that case," said the young instructor, "you must give up the idea of riding a bicycle."

But the writer of that article, whose simply *scientific* ardour here runs fast, would not, I think, differ from us on the larger question which some call metaphysical. I hope that he would agree that if Mr. Burke has found an unchallengeable case of abiogenesis, he has simply made us contemporary spectators at first hand of the mysterious advent of life which we have always known must at some time or other have been accomplished in the past.

Bouillon, of course, however dead and sterilized, is not an inorganic compound. For a recovery in experiment of the first origin of life we need something quite different from the reappearance of life in a lifeless infusion made of material which was once living. But, if this limitation is remembered, it is difficult to exaggerate the present interest and the possible importance of Mr. Burke's observations.

Articles on the same subject in the *Standard* of June 21, and the

that happened which a writer pictured for us a year or two ago—if we received a message from Mars declaring that in that planet beings like ourselves had found the proof of atheism. It would make no difference to this real faith if all the stars sang in chorus, "There is no God." This would only show to the man who was at all beginning to be a real Christian that something had gone amiss with what, thank God, we find in fact to be the unchanging witness of the skies. True faith is not dependent upon nature, it does not arise by the accumulation of a multitude of particulars in experience ; it *grows* from a root of vital intercourse.

I speak here as to those who have a firm hold of our Christian faith. Like all of us, you wish to see it stronger, and you look for the tests by which it may be ascertained, and especially for the

Westminster Gazette of June 24 ("Radium and Life"), are, I venture to say, models of what such articles should be, in respect of scientific caution as well as of metaphysical liberty.

No comment, indeed, could be better than that of Mr. Burke himself upon the discovery which he thinks he may have reached. He says, "In fact, if it can be shown that dust and earth can produce life on account of radio-activity, it would only confirm the truth of Biblical teaching."

We seem to have reached in the general Press the level of liberality on which the *Guardian* stood twenty years ago, and earlier. A large chapter of discussion is closed.

But how many years must still pass before such words as Mr. Burke's overtake, in the minds of a certain larger public, the effect of arguments of a different tone, written long ago, and *now* offered in cheap forms as the living utterance of science.

experiences by which it may be made to grow in vigour; but still you are not at all in danger of giving it up because at a given point you cannot come to terms with Science. On the contrary, you are in more danger of saying, "This Natural Science of the modern world is a false and bad science, because it challenges our inward conviction of the rank in being ,and of the intrinsic value, of human life." To such a temper, to such a feeling, what can we say?

I. Ought we not to begin by saying this? The position in which we find ourselves is not essentially a new position. We lately glanced at it from another point of view when we were considering the Bible. The position is that Natural Science endeavours to disclose under the form of a *history of origins* what we have always known about human nature under the form of a description of its actual state and of its observed course in individuals. We always knew that human nature was a great mystery, a mystery of unmeasured apparent inconsistency. There cannot be added to our thought a single word of humiliation; we have drunk deep of the cup of disgrace from the very first. "What is man," says the inspired poet, "that Thou regardest him? or the son of man, that Thou considerest him?" He is stuff, and made of stuff, and is perpetually remade

I. Biological doctrine of the origin of man. The position not really new.

from the same source, during his short span in this world. He is dependent, to the last degree of humiliation, upon the material things beneath him. A pinch too much of some ingredient in his food may not merely wipe out his animal life ; that would be a minor token of subjection. It may do more ; it may prove strong enough to disorder his moral nature, those powers and qualities by which he stands above the world. We knew of old that heat and cold and approaching thunderstorms, circumstances of soil and air, conditions of light or situation, we knew that these could penetrate to what seemed to be the very roots of his character. We knew that a man's mercy, his justice, his confidence, even his integrity, may all suffer eclipse after a sleepless night ; that he is apt in the confusion of fever to seem another man and not himself. And, moreover, for some considerable time past we have known that if you could safely, without imperilling his life, lay a trifling pressure upon certain areas of the brain's surface, he would cease to exhibit the thought which belongs to the definition of his nature, and consciousness itself would be for the time extinguished under merely material influences. And yet "what a piece of work is a man (this quintessence of dust) ! How noble in reason ! how infinite in faculty ! in form and moving, how express and admirable ! in action,

how like an angel! in apprehension, how like a god!" [1]

All this, or almost all of this, we knew perfectly well from the old days. Was it not known in the least critical ages that this immortal spirit, this great creature in communion with God, this soul who, as the Greeks said, was "the measure of all things," was still but "the paragon of animals," and had only to be struck hard enough with a sharp point between the ribs and he became nothing but stuff for the camp followers to drag out of sight. It is a very old, old, sad story, the story of the mixed nature of man. And all through the generations we have managed this difficulty, we have been enabled to bear with it by reason of our ineradicable consciousness of his essential nobility.

All along men have said, in different tones, "The negative facts, the low facts, do not avail to extinguish the witness of the great facts; more than that, they do not possess any real tendency even to dim that witness. So St. John says about spiritual life in general, "The light shineth in the darkness, and the darkness does not put it out." It is indeed a physical fact of great significance that the greatest depth of darkness not only does not avail to put candles out, but even has no

In the analysis of man the positive nobility does not become insignificant.

[1] *Hamlet*, act ii. sc. 2, line (*circ.*) 320.

tendency to do so. The lights do not shine the least less truly, or less brightly, because the darkness is let in upon them. And all positive facts have this character ; all facts of positive spiritual consciousness and life have, through the whole history of mankind, held their place in human convictions, in the very presence of facts which seemed to be incompatible with them.

And, besides analysis, we had a brief historical view.

But, further, we did of old possess a *brief* historical view of human nature. We did not go very far, but we did know about ourselves as individuals what Solomon put on record of the origin even of a king. Every one of us had the same strange little beginning ; every one had the like pale or dark-red wrinkled aspect once, when first he looked upon the world and cried out at the light, and felt feebly after things, not knowing what he desired, and did not recognize those who loved him and whom he needed. And when first our feet touched the ground, we all staggered wildly in an absurd manner, aimless, confused, unpractical, giving no promise whatever of the strong man, showing indeed not nearly so clear an indication of what the adult would be as do the infant stages of lowlier forms of life. "I also," says the King in the Book, "when I was born drew in the common air, and fell upon the kindred earth, uttering, like all, for

my first voice, the self-same wail."[1] And later, in the petulance of early strength, in what Faber rather cruelly calls the "inevitable ugliness of youth," few hints are in some lives given of the nobility of sacrifice which will appear later; of the infinite courage which is in man, and of the insight of which he becomes capable. There are many young lives full of light; but in some which will afterwards be worthy, there is hardly a gleam of wisdom, less than a gleam of goodness in any real sense of that word. All this we have known from the beginning, and accordingly it ought not now to shock us when the same knowledge comes in a new form. We ought to have drunk deep enough of this humiliating truth not to be alarmed when we hear that the history may be extended beyond the individual life, and that there is a "Law of Von Baer" with respect to *human* developement also; that is to say, that the individual growth represents in small the conjectured history of remote descent. If this is true, surely it does not add essentially to our humiliating, to our humbled position. We are sharers indeed in the material world, with all its lowly circumstances; but the nature of a whole must be judged by its best, must be judged by its greatness and its heights, by its end and not by its beginnings. So we learned from Aristotle long ago; and

The nature of a thing is determined by its perfect developement.

[1] Wisdom of Solomon, vii. 1–7.

it is impossible by any contemplation of the lowlier facts of life to get rid of the meaning of the great facts, to lose—not to point now to the highest of all—the significance of the poets or of St. Paul as he lives so freely in thoughts so great ; and, whatever this or that critic may sometimes think about his premiss, about his right to speak, yet reasons so wisely, so solidly, moving at home in the great world of great ideas ; and drawing, moreover, from that world forces operative in the ordinary scene, operative for society, creating, as in the human sense of the word St. Paul in fact created, all that we call modern Europe. We have to judge things by their end, by what they come to. And supposing, as I said lately about the purpose of merely organic life, supposing we could trace back the series to the humblest beginning, we have only in consequence to conclude that in that formless beginning lay all the promise and potency of an almost unimaginable wealth.

With regard to man we are not in a position to draw this conclusion, to reduce what we see to a lowly origin. We seem forced to suppose a complex origin for that complex nature. But so far as the point is concerned that all things must be judged by their excellence, we are on exactly the same safe ground with regard to man as with regard to organic life in general. And the point I would make to Christians is this

—that baffling as it is to us and to all men, to contemplate this material past of the race, with anything like equanimity or with anything like clearness of thought (for it lies quite beyond any conception we can form of it), yet it ought not to add essentially to the old humiliation in which we have all along walked. For from the beginning man has known himself to be on the one side a creature walking in a vain shadow and disquieting himself in vain, whose life, according to a certain measure of judgement, is but a toilful rise and a helpless fall. With uncertain and dangerous advance he reaches, through a youth which shows already the incidents of decay, the level ground of a momentary prime ; and presently weakness appears in the harp of a thousand strings, and the harmony is silenced, the beauty is formless, the man is nothing. We always knew *that* about him on one side ; but this could not extinguish the other consciousness, and it could not rob of its significance the other and greater facts. If, then, and quite provisionally, we were to accept, as having some measure of probability, the statements proposed to us on the side of biology, we ought to feel that they do not add essentially to the puzzle of mankind. They have only read out in fuller form the dusty side of our nature which was all along familiar to us.

They have read it out *sub specie historiæ;* they have shown it as a sequence of events. Formerly it was dealt with simply by way of analysis. We said of old, there is the lower part of man and the higher part. But now we are invited to think that there was a lower *past* of man which explains the lower part; and we must reassert the grounds for believing also in a higher past, and in the higher possibilities of the future. But in this we are merely reading out into a new formula, under a new category—the category of time—what all along was perfectly familiar to us under the category of substance, as an answer to the question of *what we are.* To say how we *became* what we are does not alter the main effect of the facts. We always had to bear up under that weight, under that knowledge of our earthliness, of our material existence, of our animal kinship; and because that kinship is read out to us after a fashion which may not stand the test of time,—for my part I think it will, though just now, with greater light upon its own difficulties, it does not stand quite so well in the battle of thought as it did at first—this does not essentially change the problem which has always been before all those who considered seriously the nature of man, the mystery of man's existence. If then we could all along bear with the low because of that brightness

We have now a long history in place of the analysis of inspection.

which shone above it, so we ought to be able to bear with the new story of origins.

And certainly this story provides no ground for parting with our positive convictions. On the contrary, if it could be shown to come into direct conflict with these, then it is quite plain to us which of the doctrines will turn out to represent the passing opinion and which the unshakable conviction. It is the story of the material things which shifts and changes under the light of advancing knowledge, different tempers of inquiry, different fashions in the world of thought. It is the abiding conviction of the timeless element in the nature of man which stands sure, and which alone can account for the fact that he has so much as any curiosity, far less than any power to satisfy his curiosity, with regard to the scene in which, on one side of his nature, he forms a part.

But this affords no reason for parting with our knowledge of what man *is*.

It is to be confessed that studies in the Natural History of man are easily found gloomy and uninteresting; if unbalanced, they become depressing; they ought not to be found alarming.

II. From the suggestion of apology for the new Natural History of man we have now to turn to the defence of our old spiritual convictions against a naturalistic attack.

II. Natural Law in Human Life.

This defence is weakened, as it seems to me,

by a certain unwise and unnecessary intolerance. The method of science is a method of limitation. A purely natural science is of necessity excluded from the study of spiritual laws. But it would be a mistake to conclude from this that the *facts* of spirit and those subject to natural inquiry are contained in mutually exclusive spheres. It is a notion like this which constitutes a grave danger for spiritual thought. There has been a tendency among those who believe in spirit, in freedom, in will, and personality, to speak as if the advance of the observed range of natural law was a menace to the kingdom of freedom ; as if the place of freedom began where law was left behind, so that it became the interest of those who believe in freedom to keep back the advancing waves of manifested law. (The advance is, of course, the advance of a *manifestation*, for the law itself is now what it must always have been.) That notion haunts the minds of many people who believe in God, or who believe in man ; and consequently it has been accepted and absorbed by men upon the other side. The other side has seen an enemy in the name of freedom as if it challenged the integrity of law. Even in these last few weeks, one of the writers in the *Times* correspondence about Lord Kelvin's speech suggests that the assertion of a spiritual reality, or a directive power underlying organic life would, if it were granted, sweep away (I am not giving

the words) all that Darwin has won for us. And the writer justifies this assertion by showing what Darwin has indeed won for us, namely, the advantage of bringing organic life within the range of our conception of law.[1]

There is no doubt that formerly natural law was thought of as extending through the material, or merely mechanical movements of the world, but stopping short at the boundaries of organic life. The inclusion of organic changes within the conception of law has indeed, been powerfully promoted by the Darwinian movement; and, in fact, this change of thought has been welcomed now for a long time by Churchmen—for example, in the pages of our Church journals—as the most important result of Darwin's work, and of the work which he inspired. As this work goes on, uniformities of law will be traced in organic nature as truly and with a more intense interest than in inorganic nature. But the extension of the range of law does not carry with it the restriction of the range of freedom. Freedom does not find its refuge where law is absent or unknown. On the contrary, freedom never has its chance excepting in so far as the free person not only is existing under a system of law, but has discovered its nature, and so is able to lay hands upon its advantages. Long ago Hegel said that necessity

[1] See note on p. 273.

and freedom were the same thing looked at from different sides; and this statement represents not simply a truth of the higher logic, but a fact of experience. What we find in experience is that law is everywhere, and that freedom, without being absolute, runs all through it and increases in the ratio in which the law is observable and observed.

Law and Freedom do not vary inversely.

What is society? Society is a system of necessities. If there was not a regular, however imperfectly known, sequence in the developement of the minds and actions of nations, there could be no science of politics, no science of history, no forecast, no judgement, no prudence. In one point of view, political art rests upon the knowledge of the laws by which nations move from point to point. But what is political action viewed from another side? Is it not precisely the activity of *persuading* men to do what before they did not wish to do? And in the smaller spheres of human intercourse, social life is altogether a network of necessities, but it is at the same time altogether a network of influences, of persuasions, of asking, and of granting or refusing what is asked. It is, therefore, a fact of experience, and not only a conclusion of absolute philosophy, that necessity and freedom penetrate one another. Their spheres are not separate, so that the one stops where the other begins. They are rather two

mysterious aspects of one given reality. Consequently, if law comes to be read in all the doings of life and can be traced in clear sequences in many parts of our being which, at one time, we thought rode aloft of law, this will not by itself narrow the range or lessen the evidences of freedom. But the kind of fight which we have kept up against the mechanical explanation of human life has given rise, and has given roots, to the conviction in the minds of many good men who study especially the law-side of things, that the two explanations are alternative and mutually exclusive explanations. It is the very vocation of thoughtful believers to resolve superficial contrasts and oppositions. And it is our duty to remember, with regard to this matter of human descent, human heredity, human national characteristics, and all that goes to make man what man is and the several kinds of men what they severally are, that when the whole range of events comes to be drawn within the scope of law, this will not exclude the fact of freedom.

III. Mental Physiology.

III. We pass to another head of what is formidable in the naturalist criticism of the spiritual doctrine of life, I mean the new psychology, the study of mind which rests upon physiology. There, again, we find a source of confusion in the tendency to treat the physiological explanation as a sufficient alternative for that which uses

the terms of spirit, rather than as a new version in different language. The older psychological systems were the work of men who contemplated the reality itself which we actually possess in our consciousness; who asked themselves, without much considering the external conditions of consciousness, what consciousness itself contained. They answered, it contains names, concepts, judgements, purposes, and so forth. Such a study deals with the fact itself as we know it at first hand in our own minds. The mental physiologist, on the other hand and as a complementary work, attempts to find out the machinery by which the thing itself, the thought, finds its ground in our bodily frames. And a great deal of good will be done now that professional psychologists are more and more ready to learn from physiology this physical aspect or condition of the thought which is the direct object of their study. For in this way they are likely to bring to an end the half-hostile feelings with which pure psychology has sometimes been regarded by the physical or medical student of mental facts.

His explanation will then no longer appear to be an alternative exclusive of the other; and yet how easy it is to set it up as if it were such an alternative. A man says, I am full of grief and depression of heart because of the sense of my sins. And the medical account of the matter

might, I suppose, if it were thoroughly successful, trace all these impressions to changes in the circulating medium, the blood ; to degradation of tissue in the brain ; to want of proper co-ordination in the different parts of the great central exchange-office of our nervous system. It follows that the physiological critic in pressing for attention to the physical basis of mental facts often alarms the theologian or psychologist by his able presentation of the truth about nervous impulses, about senso-motor, and ideo-motor reflex actions. Still worse, passing beyond the geography of our confined education, he describes in language sometimes invaded by psychological terms, the lobes and convolutions of the brain until at last you almost catch the impression that he is *conscious* of afferent impulses, *conscious* of the lobes of the brain, conscious, as I once heard a distinguished physiologist in a hurry say, of the large pyramidal cells which distinguish part of the brain's cortex. Consciousness is not in fact thus richly furnished. What the consciousness reports is not the afferent impulse. The consciousness reports feelings, names of things, judgements about things, motives and, in more highly developed natures, regret, repentance, aspiration. We know these other facts, the grey matter and the ganglia, by inductive science ; by the observation of other brains than our own, by dissecting the tissues and nerve

tracts of other organisms, and by putting, as we say, two and two together. In health we are in no sense conscious of them except as ideas. Of physiological ideas one is conscious as of other ideas, but one is not conscious in that sense of physiological processes.

It may seem absurd to dwell upon so easily recognized a confusion ; but the defensive attitude of the theologian, finding ground for alarm in the suggestion of a material basis for the movements of thought and will, may be traced to a conviction very natural when we consider the language of some physiologists, that material studies in general have produced an alternative and hostile account of what theology has hitherto known as the soul. And there is no complete absence of this kind of confusion even on the side of the physiologists themselves.

Physiology is not a substitute for Psychology.

We ought, therefore, gladly to welcome all the help that we can get from those who tell us of the machinery of the body which in a manner not understood accompanies thought and constitutes its material condition ; and we ought, indeed, to stand very humbly, wondering at the great mystery of the inter-connexion between the two sets of facts ; and quite frankly to confess how new this knowledge is to us, and how startling it is to learn that material changes can so profoundly condition and

modify the movements which we thought to be quite independent of them. We have much to learn in this direction. But still all that we can learn of the machinery of mental processes and of co-ordinating arrangements, of structural changes which may be conceived as accompanying the observed fact of mental associations—all this does not lift the veil from the secret foundation of thought itself, that thought which always remains distinct from every material object. The nervous organization is indeed the nearest edge, the most closely apposed part, as it were, of that material scene which must always remain other than the thinking subject which perceives it and co-ordinates it and brings all those complex formulæ of law into it. But in the study of nerve we have not bridged the gulf between matter and that which is not matter.

What is memory?

Take, for example, the case of memory. What I may venture to call the unsophisticated psychology which took little account of physiology might speak of memory as almost wholly mysterious. How does the man look back upon his own past? How does he measure the present accomplishment against a former state of being? What is the *continuum* on which the two states abide and by some scale in which they are measured? What is it in the man which judges and disparages his own present

power of judgement? Or, if this seems simple, what shall we say of the *moral* comparison of self with self, a comparison at once more delicate and more severe? How does the man condemn his present moral apprehension by the standard which was his own yesterday? And the physiologist is ready to answer: All these mental connexions have a material basis. You undertook a certain action at a former period under a certain stimulus coming from the sensory organs to the brain. The brain worked out suitable motor impulses to meet the case; and these received a certain measure of success and satisfaction. And both the reception of the sensory afferent impulses and the production of the energising efferent impulses left their impressions upon the nervous tissues.[1] There the action left its record in subtle changes of structure or state; and this record is memory. When to-day you undertake an action of the same kind but with a lower degree of energy, it leaves a new but comparable result in the same organization, and it is in the likeness and difference of these two records that the impression of improvement or defect is found.

Such an explanation, phrased in a better way than this, seems for the moment to take the

[1] The afferent impulses are those which travel from the nerve-endings to the centre; the efferent impulses are those which travel from the centre to the nerve-endings.

mystery from memory, from self-reproach, from regret. It is only after a pause that the question asserts itself, But who read the records? Who compared them? Did the old record read the new one, or the new record the old? And how did the new experience itself find power to measure itself against the old? Or was there, after all, some third power which looked at them both, or was conscious of them both, which felt (as, without knowing its exact nature, we feel the sense impression) the net *result* of the sense impression translated into terms of consciousness? To speak of memory as a mere matter of successive nervous events is something like saying that in a phonograph the record on the second half of the cylinder was able to recognize its own likeness to, or difference from, the record on the first part of the cylinder.

No. The clearest physiological explanation, most valuable as all such things are, of the machinery of memory, never arrives at discovering that mysterious unity upon which, as on a kind of conscious sheet, all these changes transpire, the unity of the personal consciousness. The physiological and the spiritual accounts of these matters have been unwisely, and without justification, thrown into antagonism, as if they were mutually exclusive alternatives. They are really two readings arrived at by different

approaches to the same set of facts. To use once more a foolish example, it is as if one should object to the statement that a crime was the effect of an evil purpose, because it was also of necessity the effect of muscular energy, or the corrosive properties of an alkali.

IV. The direct effect of scientific studies upon spiritual appreciation.

IV. The conjecture of human origins, the enlarged perception of the reign of law in human life, the novel investigations of the physics of psychology, these are three disturbing elements of scientific teaching with regard to our own nature, and for the moment hostile to the claim of spirit. I pass to another reason why there is in physical study, at any rate while the studies are new, a tendency towards disparagement of spiritual facts. It is a matter on which, perhaps, we might well have spent the whole time this afternoon ; for it is very interesting and very little examined.

And first, it is certainly worth remark that the studies which are technically called physics and mechanics, which are controlled by mathematics and examine by means of numbers the behaviour of masses and molecules—do not have this character. It is a fact that most great physicists—at least a very large number of great physicists—have been at the same time eminent Christians.

There does not seem to be in that range of study any natural tendency to obliterate or to

confuse spiritual apprehensions; but there does seem to be some such tendency in abstract biological studies. The tendency is not evident in biological studies when they are active, when they are practical, when they have regard to medicine or to public health. They do not then seem to have any particular effect upon the opinions which men hold on other subjects. But biological studies in the abstract do seem to have in some measure this tendency. I must reserve for another time what I think to be the most important cause contributing to this result in the particular case of biology. It seems hardly sufficiently explained by the operation of *selective attention*. But this operation deserves notice here, since it has lately received much study from psychologists; and we may recognize its effect in the case of biological studies, though we cannot determine why the effect should be especially great in that case.

Selective attention.

We know ourselves very partially and very dimly, and we think that we attend moderately well to all the objects and affairs which come before us. In point of fact our attention is strictly confined, and very highly selective. Something of this truth may be seen in a physical image, in the action of the sense of sight. A man might naturally say, for example, that he saw the whole of this building quite plainly. But the fact, I suppose, is that we see one very small

portion of the field clearly, that portion of which at a given moment the image is thrown upon the yellow spot of the retina ; and that as soon as the eye moves ever so little so that this image no longer falls upon the yellow spot, that object is seen only quite dimly. Thus, there is only one small circular area in the whole scene which one sees with anything like definition, and of the rest there is a mere blurred image. But this is not the impression we carry away with us. For the eye continually moves ; and in this way we have from one side to the other of the room a range of clear images formed in succession, but which we carry with us in a kind of brief memory. And accordingly, although at any one moment one has a strictly definite vision of only one particular point, yet when the whole scene is changed for another scene, the natural statement and the natural impression is that we saw the whole of the first in one experience of sight. The artist, if he is to convince us by the representation of a scene, is obliged to show a considerable range in considerable definition. If he placed upon canvas the record which our eye really receives by looking steadily at any particular scene, his picture may come to be disrespectfully described, as some valuable impressionist pictures have been, as "a spot of painting and a lot of fudge." But such a canvas corresponds in a certain true sense to

what the eye really receives. The painter in order to fit our notion of what we see, has to represent a great space seen in clearness all over its extent; of course with gradations of clearness, but with very much more clearness than the eye ever enjoys in any one experience. I believe that an architect could tell something of the extraordinary difficulty of drawing an interior which shall be convincing to the layman or the client. An interior drawn in strict perspective, as if from an actual and single point of view would suggest to the untrained eye and mind a roof leaning far upon one side. The convincing representation which recalls such a building as the client hopes to see, is made, I have heard, by combining portions as they would be actually viewed from several points, into a whole which is a kind of compromise.

This may illustrate the way in which we overrate the quality of our apprehension, and overestimate its range. Something of the same sort happens with regard to what we call our view of life, our *Weltansicht*. But in life at large we have no such ready means of correction and combination as we have in the narrow and particular experience of physical vision. We are not able, for a judgement of life's meaning or of life's aspect, to change almost instantaneously our

As we cannot avoid or correct it, we must allow for selective attention in our view of life.

point of view ; for the mental standpoint is fixed by a long preparation, and is not easily changed. Nor have we anything nearly approaching to the instinctive machinery by which, in the visual sense-experience, successive images are knit into a whole. Mentally, we have the same false impression as we have in sight, the impression of a wide range of simultaneous clearness. But we have not, at least in anything like an equal degree, the same means of keeping such an impression close to the facts by successive views, or by binocular vision. His was a rare gift who " saw life steadily and saw it whole."

Yet we are not slow to claim this choice fruit of long experience, of sure intuition. We fall easily under the conviction that the whole scene and all the rival explanations of its significance are before us for judgement and for choice. But in fact, just as in physical sight, the eye sees really —that is clearly—but one spot, so in any particular walk of our life we see but one class of facts clearly and really, and the rest of facts, though we think we do them justice, although we have the impression of judging life in a thoroughly impartial and enlightened way, have sunk into dimness. How hard it is to remember this limitation with regard to our special pursuits. For my own part I can bear witness that the special pursuits of biology, at any rate when they

are fresh, when they come upon the young and forming mind, have a tendency to exclude almost entirely from direct and definite thought most of the other measures by which men and life can be judged.

The absorbing character of Biology.

You must remember the extraordinary fascination of the study. You must remember its exhausting and exacting discipline. And further, the study is very new, unlike anything that we have been prepared for at school; it offers teaching which is often totally unlike our general notion of nature as we had it from childhood. Biology is full of surprises, of paradoxes, of fresh constructions of idea from the foundations. The new work absorbs the attention to the exclusion of almost every other consideration; and the student wakes up to find that he has been thinking of man as one of the *Primates*, as one of the *Mammalia*, as one of the *Vertebrates*, as immensely distinguished in his early ancestry by the possession of a notochord, and as differentiated from his nearest congeners very largely by the happy absence of a fully opposable hallux.

These characters take of necessity an important place in his mind. He knows a great deal of the sutures and foramina of the brain-case, of the arrangement of the facial bones, of the angles of the skull. He has considered the deleterious

effects of adopting the erect posture so ill-suited to some features of our anatomy. And all this excludes from his notions, I will not say great and high things, the notion of poetry, the thoughts which come to us by inspiration ; it excludes for a time all appreciation of the other great sciences which are being pursued within a stone's throw of the building in which he works. Indeed a moment comes when science may be said to have hidden nature.[1] This absorption may become very nearly complete. I remember the case of a man shocked out of that position of fixed attention to these facts—by what? Not by a great and inspired drama, or by a story of human passion and tenderness and courage, but by an article on Banking which struck him at once as being quite outside the kind of knowledge he had been accustomed to consider.[2]

[1] " Ceux qui passent toute leur vie à l'étude des coquillages, disent qu'ils contemplent la nature. O demence aveugle ! "—' De Vauvenargues, *Discours Préliminaire*,' printed in the first edition only of his works.

There are some students of science so much lovers of nature that they are aware of the possible error and guard against it. " I love nature and I hate science," was said to me twenty years ago by a very distinguished zoologist, who in the interval has so served science as to bring nature nearer to us.

[2] I think this tendency of a special study to fix and limit the mental range (somewhat as a man's head used to be fixed in the photographer's studio) is stronger if the student is allowed to devote himself to any science without a preliminary expatiation in the arts. The ' arts ' course, introducing men to a number of different modes of thought, all made respectable by accomplished utterance, perhaps

There is, then, an immense force in selective attention; and men must be ready, if they are following studies connected with the material side of their being, perpetually to allow for their inevitable effect of seclusion. For this effect will be stronger in special studies than in studies more general, and it will be strongest of all in those studies in which we have few comrades.

If we study politics we must meet with other men of all kinds who are studying politics from other points of view, and who bring their perceptions into the general stock. But if we gain entrance to the high and great schools of natural inquiry, so absorbing, so zealous, so jealous of interference, so wonderful in success, so miraculously practical in effect as compared, for example, with our fumbling experiments in social reform; then

by itself tends to excessive developement of the liberal and critical faculties. Under this training the man learns to question everything, and to hold himself free to believe anything. Such an influence as this is, however, very wisely combined with the influence of science, for this last tends by itself to paralyse the native faculties of criticism, and to make men slaves to the recent orthodoxy of an intellectual school which still has some of the intolerance of youth. Laud, wondering (in a letter to the Bishop of Winchester) "why so many good scholars came from Winchester to New College, and yet so few of them afterwards prove eminent men," thinks it is because the probationary "two years, and some years after, are not allowed to logic, philosophy, mathematics, and the like grounds of learning," instead of being devoted at once to Calvin's Institutes. This, he said, "doth too much possess their judgements before they are able to judge."—(Hook's *Archbishops of Canterbury*, vol. vi. p. 273.)

we must remember, and we must resist, the great pressure of a profound and selective attention which victoriously absorbs all the powers of the mind in one aspect of things, and for the time leaves, so to speak, no sensitive surface unexhausted and ready to respond to any other stimulus.

You know the behaviour of the eye. Set the eye over against a bright surface and it becomes after a time deadened. It has no sensitive element left ready to vibrate to fresh rays. This exhaustion may, of course, be only partial; may affect only some elements of the sensitive tissue. Set the eye not against a bright white light, but against rays of a particular measure; as, for instance, those which give rise to the sensation of red. If you look long enough, all those elements in the retina which vibrate to red are fatigued. They have finished their little stir, and can stir no more for the time. Consequently if the eye is now newly set against a white surface, it brings to you only the message of green, this being the colour which sets in activity those sensitive elements which have not answered to and so have not been exhausted by the red light.

There are cases, then, in which the mind turns with refreshment to new subjects; but the image more fit for our purpose, and of more general application, is that of a reception of light by which the whole retina is for the time exhausted. In

some such manner the mind long closely set upon the spectacle presented by science loses its answering, its receptive power. Fresh objects find it dulled : and it is able to trace its way only through what is familiar and requires no direct apprehension. The reading man, no longer shot or angler, can still, and half by habit, read the accustomed page. But for fresh discoveries his eyes lack force and keenness.

Some of us find ourselves dull and insensitive to spiritual impressions. Along the accustomed track, given rest, we find our way by a habit which survives joy. But there is an inflexibility, a want of elasticity for more distant views. Our complaint is not of any difficulty in religion. We have nothing to object to there, for we have nothing to experience. We do not know how to begin to think about it even in criticism. Let us remember that we have the same inability with regard to many particular pursuits outside our special sphere of interest. But the absorption in material things as such is more universal and more dangerous. . . .

I acknowledge a hope that we shall less steadily than for some time past illustrate this familiar truth by the example of Darwin's failing interest in poetry. Too much has been made of this. Darwin was one of the simplest, sweetest, gentlest, most

Charles Darwin.

alive of all beautiful old men. His was a large nature of special powers, and with a singular freshness. Inquiries which exhaust most men do not exhaust the Titan. This man was great enough and wise enough, patient and humble enough, to give himself in a very whole-hearted way to his wonderful studies of some of the humblest parts of nature, and at the same time to keep his heart as fresh and tender as a child's, quick to respond to friendship and to love, and awake, as one of his letters to Romanes shows, awake up to the end to the great mystery of existence. It was he who said to Romanes that when a man attempts to judge of the great possibilities of the spiritual life—I am not repeating his exact words —by our little measures of logic, he is like one who should hold up a chamber-candle to light and search the sky above his head. That kindly frankness in which he confided the fact that he was not free from this general law of exclusive attention, of exhausted or inflexible apprehension, has, I think, been used so as to throw out of proportion our own apprehension, our own impression, of a great nature. But the truth itself, of which he afforded a measured instance, is of general application and of importance to every man who would use to the best effect the powers which he has received, and by which he is to know the world, to know himself and God.

As belonging to the general subject of the effect of Natural Science upon our thoughts of human nature, I have proposed these four topics: the biological doctrine of our origin; the extension in thought of the reign of law to man; the contributions of physiology to the study of mind; the tendency of biology to diminish our personal appreciation of spiritual facts. In all four cases there is matter for serious study, and for prudent management, but nothing which should rob us of courage either for faith or for science.

IX

SPIRITUAL EXPERIENCE AND DOGMATIC RELIGION

The title corrected—Two contrasted schools of religious thought—The work of the new generation is to reduce these divergences—Distribution of inquiry—Argument and experience—A function of argument : to make room for experience—A particular delusion affects a man's general intelligence ;—and it affects his social usefulness—Christian faith has raised the power of intelligence in individuals and societies,—and it has raised the power of common action—It is through Christ and the fact of His Church that the soul is bound to the Positive content of the Creed—Non-Christian faith and goodness—The influence of the Church on those outside it—The present address merely suggestive—Envoy.

"The witness is this, that God gave unto us eternal life, and this life is in His Son.—1 John v. ii. (R.V.).

The witness or evidence consists in the fact that we have received from God the present gift of eternal life ; and in the accompanying fact that this life belongs to Christ and is in Christ. The man who knows that he has passed from death unto life, knows also, and with corresponding certainty, that he possesses the new life not by himself or for himself, but in so far as Christ

is in him and he in Christ. It is not the reinforcement of his own old life but the translation of his being into the life of another, "I live, yet not I but Christ."

This twofold experience is the witness or evidence, or, in earlier and still legal English, "the record." By this we know that we have not followed cunningly devised fables.

By the terms of the notice-paper, and not altogether by my own initiative, I stand to-day committed to a discussion of the contrasts and connexions between Natural Religion and Revelation.

A few words, I hope, will be sufficient to explain both why the terms of this title must be changed, and why it is desirable to conclude our course with some kind of consideration of the great subject which is intended.

To take the last-named question first, certainly there are motives in abundance to restrain a man from adding to notes upon natural science, a brief mention of the great questions of religion itself. Nothing like a sketch, in however slight an outline, can be provided even of one's own conception

of these high matters, and they might well, on many grounds, be set entirely apart and reserved for other opportunities, and indeed for other speakers.

But there are reasons for another course, however inconvenient it may be. It would be mischievous, by complete silence, to suggest to any believer the idea that the high interests of his faith can be really separated from any inquiry, however humble and departmental, or, on the other hand, that any religious inquiry concerning science can be isolated from those greater interests.

What can we do? We cannot give any sketch of an adequate treatment, but we can once more say that such a treatment is to be desired, and we can point in the direction of it — the direction along which an inquirer must adventure who desires to pass from such subjects as have occupied us, to the eventful fields of theology itself. For indeed it is not the avenues of doubt which are most full of possibility and activity. The man who passes from these to the questions which lie within the range of faith will find that he has passed into a fuller and a more exacting occupation of all his powers.

Of this general necessity for some word of suggestion, I had lately a particular signal.

In one of the earlier addresses in Lent, we

agreed, you may remember, to appeal from argument to the experience of human souls; and we pointed to the believing state as a fact which must be accounted for like any other. It is indeed this appeal to experience which marks the scientific temper in religion.

This plea produced an interesting sermon which was sent to me by the kindness of the preacher, a distinguished man who has maintained for many years a ministry to souls upon a theistic basis, I mean Mr. Voysey. He seeks to popularize a religion founded upon facts about which everybody is agreed; and his sermon was an interesting and devout one welcoming our appeal to the facts of spiritual experience. Its title was "Prayer as a support of Faith," and its object was to reinforce any plea for reliance upon the inward witness, but at the same time to urge that the Christian experience, or rather the experience of Communion with God, has no essential connection with Christian dogma.

This I need hardly say is not an account of the matter which we can accept. We have found that the victory which overcometh the world is our faith, the faith that Jesus is the Son of God.

At that time, therefore, I thought it would be right to take an early opportunity of suggesting some thoughts on the connexion between these two parts of religion.

But I did not phrase my title rightly, and I wish now to amend it. For what we ought to consider is not so much the connexion between natural religion and revealed religion, as the connexion between inward experimental religion and dogmatic or historical creeds, and organized systems of worship. The ambiguity which I fell into, though natural enough, was mischievous; because the very contention I had in view was the contention that the inward experimental religion, the knowledge of communion with God, is not connected with revealed religion, but is a part of natural religion. Therefore, we must not accept this identification of spirituality with natural religion, but must rather ask the question, What is the nature of the connexion between these inwardly possessed experiences of communion and of kinship with God, on the one hand, and, on the other hand, the dogmatic statements of creeds, and the organized efforts of what we usually call religions?

The title corrected.

Now, it is plain that any attempt out of one's knowledge to enumerate or to describe the links which constitute that bond would be doomed to failure. The utmost that one can hope for is to indicate something of the general nature of the transition in question. And it is impossible to do more, not only because of the magnitude of the work, but also because it is a work which has not

yet in any very large degree been undertaken, at least in such a way as to show the results of the attempt as a whole. In one sense, no doubt, it is the perpetual occupation of all Christian religious thought, but on this very account it would be impossible to summarize it. In another sense it constitutes a task in theology which, if I may venture an opinion, is the special and characteristic and freshly proposed task for devout thought in the age upon which we are just entering.

Two contrasted schools of religious thought.

We find ourselves now in presence of two strong and distinct currents of religious thought. Of these one lays almost exclusive stress upon the inward private experiences of the believing soul; and shows a tendency, not only to disregard or forget the historical environment in which this believing state is imbedded, but also to make it a positive point of theology to describe as insignificant and almost worthless those very 'external' facts which we should rather desire to show in relation with the personal realities of Christian life. For example, the theology of Harnack, which is considered, and, from a certain point of view, justly considered, to be by far the most important intellectual and spiritual force in Germany at the present time, and which bids fair, as we are told, to create a religious movement there and possibly a religious body, has for its positive teaching that the inward treasure of the

heart and confidence in God ought to be stripped of all historical and dogmatic conditions, and, above all, should be relieved of all elaborations of organisation and government. The Church is to Harnack not only something unnecessary, but something mischievous, something which interrupts and confuses the witness of the soul to God.

On the other hand, there is an historical and dogmatic school of Christian thinkers who, I will not say lay exclusive stress upon the large and corporate aspect of Christian life, but who would be prepared to gather together men whose inward convictions were widely different in respect of matters which are almost of the essence of faith, if only the great political structure of the Western Church could be left untouched. Is it not fair to say that these are the two important and extremely contrasted lines of religious thought in the presence of which we actually find ourselves? And is it not the very work of all devout Christian thought to seek to discover the correlation between the two parts of reality which are segregated by these schools; to show how the historical structure of the Church, in so far as it is legitimate and really comes to us by authentic descent from the dispositions made by Christ's will, finds its expression and fulfilment in the inward history of the soul. That is the very work of theology. And this it is which the men

who are now entering upon the life of thought have before them for their principal occupation through the whole of their lifetimes.

If this is true, if the work is really the special and new work of the age, it would plainly be wrong to offer any hasty sketch of the nature which I imagine ought to belong to such a process of co-ordination. All that we can try to do is to show the general character, and perhaps some one particular aspect, of the transition which actually takes place, of the connexion which actually exists in Christian minds, between that unchallengeable experience of kinship with God and the loudly challenged, though equally indispensable, foundations of Christian history and dogma, and of Christian organized life. To pass from that dim—so some people would call it—or, at any rate, general and necessarily secret and inexpressible sense of belonging to God, to all the explicit elaboration of dogma and discipline, that is the difficulty, is it not? And we can only show in a very bald way the kind of path which such an inquiry must take. Even if we obtained from our previous discussions, or rather, even if in them we found that we already possessed, something like a conviction of the truth of the presence and love of God, we should still be a very long way from positive religion as it actually confronts us.

The work of the new generation is to reduce these divergences.

Yet there is encouragement in the *hiatus* itself; for it is something to *distribute* the inquiry, to have acquired some perception of its departments and necessary steps, even if no one of the departments is at present explored. This advantage of distribution deserves notice for a few moments. For my own part, if, in the course of these conferences, I have learned nothing else, I have learned that perhaps the principal difficulty in the way of an understanding with those who, in the common phrase, do not believe, arises from no malice, from no ill-will, nor from any profound ignorance on either side, excepting that ignorance which we all share. It arises from lack of order in procedure. We are apt to take the whole subject in dispute in a mass without distinction of parts; and then to present it to our opponents by precisely that aspect of it which they can least easily manage. For example, in many men who would call themselves Agnostics or Materialists, there exists this state of mind: they desire to believe; they regard religion as a great mixed whole containing a general belief in God, but containing also a multitude of particular statements about the ancient history of the Jews, and carrying with it a great many practices and ways, some of which we hold to be essential, and some of which we should all of us hold to be unessential and merely convenient. All this mass

Distribution of inquiry.

of material comes together for acceptance; and the inquirer, with perfect goodwill, takes the Bible as that by which Christians propose to recommend the whole scheme. Endeavouring, as it were, to introduce the thick end of the wedge first, he examines the Scripture, as if it were designed to impose upon him a belief in God by the authority of revelation. Now this method illustrates what I have said of the need of distribution. Neither the Bible, nor any revelation could impose upon anybody, or even recommend to anybody, a belief in God. It must always appeal to an existing belief in God. The Bible opens with the word—to speak by rule it has for its second word—that which is translated "God," *Elohim*. You must have God, something to match that word *Elohim*, before you can construe the first sentence of Genesis. You do not believe that there is a God because the Bible says so. On the contrary, it is to an already existing, though perhaps vague and unexamined, conviction of the existence of God that the first verse in the revelation makes its appeal. And, in correspondence with this, the person who is striving to pass from unfaith to faith must, in most instances, first examine the grounds of theism, the grounds which exist within himself, for it is only when he has already several convictions within himself concerning God, that he can attribute any meaning to the first words of

positive religion. In distributing the inquiry, this is the first step of order.

Argument and experience.

Further, as we distribute the inquiry, so, also, we must distribute the means at our disposal for investigation. We have more than one power within us for the investigation in which we conceive ourselves to be employed. What function in this investigation belongs to argument? Here a familiar answer must be repeated. Argument, dialectic, discussion never produce the enrichment of our knowledge of facts. It is not their business to furnish our consciousness with fresh convictions. It is worth while to reflect upon this, because although it is so familiar a truth, yet in common practice we perpetually disregard it. You will find men ready to argue for a long time about the hour at which the fast train goes to Oxford. In practice, they do not show themselves acquainted with the truth that argument can never give us positive information with regard to matters of fact. This is always obtained in another way altogether. The only sort of arguments fit to settle matters of fact are the so-called arguments of schoolboys which consist in the alternate utterance of confident affirmations, ending with an offer to support one's affirmation, first by a wager, and finally, in extreme cases, by an appeal to force. Such discussions, I admit, do eventually enrich

somebody's consciousness with a new fact; but it is doubtful whether they properly deserve the name of argument. Arguments which properly deserve the name, have for their function to disentangle the already existing content of the mind; they never add to our positive information. No argument in the world could show that the Cambridge tap-water possesses radio-active elements which are removed by boiling; but the consciousness of mankind has been enriched with this most surprising fact within the last week, not by a process of *à priori* argument, but by a carefully conducted system of experiment. It is perfectly true that you might conduct an argument on the question of the validity of these experiments. There might be, there probably will be next week in *Nature*, a letter to show that a mistake has been made. That is a proper subject for argument, because here argument could make its appeal to facts known in common and acknowledged in common by both parties to the discussion. Argument has for function the clearing of a space on ground which has been threatened by merely antecedent objections. Against the critical arguments, advanced against religion in the name of natural science, other arguments may be arrayed; and if they are strong enough they will avail eventually to make in the mind a clear field and no favour. But upon this clear field, after the

antecedent prejudices have disappeared, conviction can only arise by the acquisition of positive proofs drawn from the world of spiritual fact. It is of very great importance to conduct such discussions well, because they do a real work of charity; they make the soul ready to receive whatever positive proof is available. There is a condition of the soul in which it is so entangled by supposed argumentative necessities, or by unfounded prejudices concerning real facts, that it is not in a position to read its own direct witness, or to receive those informations which God will bestow upon it. When dialectic has done its work to clear the ground, still religion can only arise by God's own gift in the heart.

A function of argument: to make room for experience.

When we speak of God's gift of truth being thus made, we have already made an important statement about the nature and mode of Revelation. Revelation is made *in man*.

Can we, to-day, find some test or proof of the value and reality of what seems to be revelation in the heart and life of man? I would point to one which it may be not unprofitable for us to consider.

I think we shall all admit that the form of a man's thoughts and the kind of ideas which he entertains on any one subject if it is sufficiently important, have a grave effect upon the nature

of his judgement in other regions. If a man is profoundly mistaken on some important point of fact, it is not likely that his mind will remain the instrument of judgement which it ought to be for his other inquiries. If his mistake is small, or if it is concerned with a small thing, then the effect of his error will be small and inappreciable ; and because he is one of a society of which all the members are in error in something, he will pass among the rest and will find correction in the general wisdom. But if his error is profound and obstinate and has reference to an important subject, it cannot leave him as free as other men to form sane judgements upon the rest of experience. Moreover, a wrong judgement upon an important matter will surely tend—and this will be, perhaps, a more delicate test than the simply intellectual one—to alter and to injure a man's relations with his fellows. It will, in the degree of its importance, render him less fit not only for social intercourse but also for co-operative action. He will be hampered and crippled. Everybody knows the extreme case of a profound delusion with regard to one of the common matters which, to the majority of mankind, appear to admit of one opinion only. If a man is obstinately convinced that he is a vegetable growing in the soil, his judgement upon several

A particular delusion affects a man's general intelligence ;

matters may be in many respects fair and good, but nobody would think of taking it upon delicate, or doubtful, or difficult affairs. We should not be surprised to find him perfectly right on many subjects, but we should not go to him in order to disentangle a perplexed question.

and it affects his social usefulness.

But what I am much more sure of is that such a man, in the proportion in which his delusion is real and is important, is unfit for society, does not mix with other men, can not maintain the ordinary interchanges which make up family or national life with comfort either to himself or to others ; and still less can he be a valuable ally in any common enterprise requiring organized plans and energetic co-operation. What is true of the case of an extreme delusion is true in this measure or that of all wrong judgements.

Now, if the Christian faith is a delusion, it is a gigantic delusion indeed ! It is real ; it is important in degree ; and it is important in its subject-matter. To imagine one's self a lily in a garden-bed would be a very trifling mistake compared to the mistake which Christians labour under, if they are not right. They are committed to statements, to begin with, of the most tremendously fundamental character ; and further they are committed to statements ranging over an immense extent of fact. They have judgements, rules, ideals

referring to every relation in life. There is no subject hardly, there is, indeed, no subject at all which has to do with the essence of morals, about which the Christian religion does not provide an answer which, with care, could be made to appear perfectly definite. Christians are possessed of a tremendous armoury of statements ; and here lies precisely the difficulty for our friends who possess in common with us the general conviction of God's presence and God's goodness. If, then, this Christian story is a delusion, how seriously it ought to cripple the intelligence in its ordinary operations. Surely a man possessed with this false history—supposing it were false—with this profoundly false philosophy, with this fundamentally erroneous conception of his relation to God and to the world, ought to be a man whom we should find failing in every department of what we all alike recognize as positive inquiry. We ought to be unable to show in the Church any historians, any scientific workers, any doctors, or even any masters of the law, for these last have to deal with the natural relations between men as they are organized together on a basis of self-interest. We ought indeed to be, as the old critics of Christianity at the beginning said we were, mutterers in corners who have nothing to do with the general work or the general thought of

Christian faith has raised the power of intelligence in individuals and societies,

mankind, and who are disqualified by their gross and pernicious superstition—I am repeating, as of course you know, classical words of the old critics of the Church—we ought to be disqualified by our pernicious superstition from all the employments of government, of philosophy, and of research. Is that approximately what we find? Is that a colourable account of what is learnt from a general view of the history of the Church; and is it what any one of us finds, when we look at the story of our own lives?

To take that lesser example first, have you found it to be the case that your arrival at conviction, perhaps after many years of doubt and faint-heartedness, has blunted your appetite for study, has clouded your judgement, has made you unable to keep pace with other people of moderate gifts like your own, in whatever work you have chosen to undertake? In such a case as this every man must speak for himself; and, therefore, I am obliged to speak for myself, and to say that the moderate powers which I possess for any kind of study have certainly not been checked, hindered, hampered; have not found in Christian faith any obstacle upon the path in any one branch of human information; certainly not in biology, certainly not in physics, certainly in nothing else to which one has given even a measure of diligence. It is absolutely certain on examination of ourselves

that our belief or conversion has not hampered, has not crippled, has not dimmed, or clouded, or rendered less alert, such powers of general observation as we have, such powers of arranging knowledge, such powers of expressing the result of our thought. And if we pass from these humblest examples within our own breasts to a general view of the Church, what do we find?

We find, indeed, here and there, at a particular point of time, or in a particular quarter, great official leaders of Church thought throwing themselves in vain against the progress of this or that science. We all remember—who has ever a chance of forgetting?—the case of Galileo. What a pity it is they did not make Galileo a cardinal, and then the whole story would have read in the opposite sense. There are, of course, higher degrees of rank in the Christian world which do not always coincide with the most special presence of light and power; but, taking the history as a whole, what do you find? Was the old prophecy of the early critics, was Lucian's account of the Church right, or Aristides' account? Which was the wiser man, Augustine or the most eminent Manichaean? Which was the more enlightened, would you say, Ambrose or the leader of those who wished to keep up the altar of Victory in the Forum? Have they been, in point of fact—these believing men—crippled, hampered, purblind?

Has Christian science been backward science ; has Christian philosophy been retrograde philosophy ? Gentlemen, there is no philosophy in the world now which is not by descent Christian philosophy.[1]

The doctrines of Kant and Hegel are derived historically from the Christian thought of the Middle Ages. Was Anselm stupid ? Who was the backward thinker, Anselm or the man who

[1] It is not to be forgotten that the form and method of our dialectic, and the very categories of our philosophy, come to us, without break, from the Greece and Rome in which the modern world began and continued, or rather in which the first triumphant impetus was gained by that movement which was to meet from the forgotten East the influence which made it our world.

But this Greek philosophy, which was to be revived in Europe in the fifteenth century, escaped extinction in the interval because its greatest works were preserved by the Church.

The thread of intellectual continuity which ran from the classic past *through* the moral and spiritual revolution of the Gospel, was guarded in the dark age within monastery walls.

As to the spirit and tendency of our philosophy, the terms of dualism (substance and accident, spirit and matter) come from Greece. But the conciliation of these contrasted terms, their inclusion in a wider unity, which gives them their value for us, is an effect from the Hebrew world which did not feel the need of synthesis because it had never lost the confidence of its spiritually-actual monism. Hegel's recognition of the ideal significance of the actual is Hebrew and Christian ; and so are all the philosophies which find the unity of the universe in *will*.

On the intellectual continuity of the modern world of logic from B.C. 450 to our day, and on the spiritual control obtained at the Gospel era by the faith of the Incarnation over an intellectual movement already strong in the victories of five hundred years, I hope that we may be able to refer by printed page and chapter to a great sermon preached by Canon Holland before the University of Oxford, June 25, 1905.

in controversy with Anselm took the title of the Fool? It is unnecessary to elaborate the question. It is plain that the history of our present civilization is the history of Christianity. It is perfectly plain that the leaders of faith have been the leaders of knowledge also. We cannot reverse that judgement because of an instance here and there of an eminent man who has slipped out of the current of faith. The thing, judged as a whole, admits of but one judgement;[1] and if we turn from the history of thought to the history of social effort we shall be driven to a parallel conclusion, that Christian faith is so far from having hampered and crippled the practical intercourse of men with one another that it has proved to be the one thing which can bind them together in a thoroughly operative society.[2]

and it has raised the power of common action.

It is true that long before our time, before the time of Christ, great societies existed which

[1] When these words were spoken, I had not read for many years Newman's magnificent last University Sermon. Let me make of this an occasion to beg others to read it again, to refresh their memory of that great argument in which he shows how "the Cross has enlisted under its banner all those great endowments of mind which in former times had been expended on vanities, or dissipated in doubt and speculation."

[2] In so far as our modern society fails to be co-operative for the best interests of all and each, in so far, that is to say, as it is false to its name "society," no one will allege that the failure is due to the excessive influence of principles characteristically Christian.

did much for men. But nobody who judges the facts impartially, I make bold to say, would contend that even the great empire of Rome, with its large extent of equality, with its world-wide justice, was a system which could compare for a single moment with Christian free civilization, when that civilization has been true to its own principles. And if, reversing our former process, we now come back to the individual case, what will you say about your own life? Has the emergence of faith in you, has the victory of prayer, has religious security put you apart from your fellows, made you unsocial, made it more difficult for you to act with others, made you ineffective? Has it not rather liberated every useful quality that you had, and brought it into the general market of human effort? Time forbids me to enlarge upon this question, but I leave it with you for consideration. And I can leave it with you the more readily because I am perfectly confident what the nature of your answer must be on a general view of the facts.

Armed in anticipation with that reply, I return to our original statement that the contents of positive religion, if they do not indeed represent the very truth, constitute so monstrous a delusion that they ought not merely to have hampered a man in his thought or to have set up barriers between him and his neighbour, but they ought

to have paralysed human thought and totally disorganized human life. Some would say that this is the effect, or would be if belief were sincere and obeyed. Appeal must be to the facts ; and since the faith is nowhere perfectly held or entirely rejected, the facts must teach by the method of concomitant variation.

So much, then, about a suggested test of the value of what we know as positive religion. It is a very strong test, a very important one. I need hardly add that it is only one among many ; and I have chosen to dwell upon it not as a feature in a general sketch of Christian evidences—for that I do not make the least attempt to provide—but as a test often forgotten, and which may profitably receive your attention on this particular afternoon.

Now for one word of contribution towards the study of the nature of the connexion between faith and dogma. The explanation can only be approached by assuming provisionally the faith of which we speak. We gain the conviction of the reality of the whole circle of religious statements only through Christ. No religious consciousness bears witness immediately and primarily to all the statements which constitute the fabric of the Christian Creed. If a man says, " I am sure, by my own inward knowledge, that this and this and this is true," you are not to

It is through Christ and the fact of His Church that the soul is bound to the positive content of the Creed.

suppose that he is speaking without justification ; but he is giving you elliptically the result of an experience by which he has scaled the steps. A man may think that he has an inward verification of the propriety of a definite ceremonial practice, but he has, in fact, arrived at it by a process of inference from certain facts about which he really possesses an immediate conviction. That is to say, he infers it from the right of Christ to organize his religious life ; and it comes down to him, this true judgement, through a long series of historical steps in the evolution of the Church. What a man really has is confidence in Christ ; and he has confidence in Christ in this particular form, that he has found that through Christ he came to be sure of the reality and the nearness of God ; that in Christ he gains a conviction to which all other experience provided only an approximation. He was always yearning after it, feeling towards it, hoping it might at last prove itself. And it proves itself in Christ.

He looks at the great scene of Nature ; and he sees that there is nothing in nature which can possibly compare with human nature as the field or matrix of revelation, the place where revelations may be expected. He knows that it is only in his own heart that the conviction can possibly be established ; that if there is a root of communion with God it is a root planted in his own life,

and that if there are outward facts which can, as it were, teach his heart how to spring, and point for him the direction in which to aim his venture after the unknown God, these facts must lie in the region of the nature which is like his own, in Human Nature. And as he goes further in his study of human nature, he sees, first, that he can by no means exclude from the facts which are to guide his judgement, the great fact of *goodness;* the nature of *good* men. And, further, that among these none wholly deserves the title excepting one, Jesus of Nazareth. In the first place, he will see quite for certain that his whole judgement of existence must *include* Jesus ; and, further, he will see that it is the apex of the series, the *good* nature, the *perfect* nature, which alone really tells the meaning of any mixed constitution.

Badness—I must not step far into what belongs to another inquiry—badness can always be accounted for as the failure of something else. But of what is goodness the failure ? It is sometimes urged that we might so read the mixed facts of life that they will bear either of two interpretations ; either that there is a good God who sometimes lets some bad things slip through, or that there is a bad God who sometimes lets good things slip through. I deny this ; for what is the nature of the ideal of which goodness is the defect ? What is the net, through the mesh of which

goodness escapes? What is the mark, the missing of which is goodness? What is the developement, the breakdown of which is goodness? It is not the fact that you can state the matter either way, that badness is the failure of a good purpose, or goodness the failure of a bad purpose caught napping. Nobody creates what is good by mistake in the effort to make what is bad. All of us make what is bad by mistake in the endeavour to make what is good. This goodness is always a positive fact which can never be explained away, and which requires a God to account for it. And so, to resume, our inquirer's view of Nature will not only *include* Jesus, but he will see that if he cannot account for the goodness which is the character of Christ he has accounted for nothing, and that therefore he might most profitably concentrate his inquiry upon that character. I must not pursue that line further; but it is along that line that the man so makes his way towards the reality of infinite goodness, that at last he reaches a point where the truth and his conviction, so to speak, come near enough to spark. Christ is Himself indeed that union-point in which human nature is at one with God; and it is in the contemplation of Him and by sympathy with Him and obedience to Him, and only by belonging to Him, that we can share the content in some measure of His life. As a matter of fact, in history, taking the world as a

whole, no men have come to be so *certain* of the existence and nearness of God as the men who were looking at Jesus, either looking back to Him by history or looking forward to Him in prophecy. You may object to me the case of Mohammedanism. But Mohammedanism is nothing but a developed form of such a belief as we are rapidly approaching in this unhappy country, the developed degeneration of a Christianity which denies its own foundations. It is nothing but a degradation of the theism received from Israel and from Christ. And if we turn from this to the general history of the world, where can you find any instance of a nation secure in the conviction of the oneness, of the nearness and operative power, of God excepting those who have looked to Christ, either backward along the tracks of tradition or forward along the almost still more miraculous road of expectation which is the especial glory of all those whose witness we read in the Old Testament? The same statement can be made about the individual life. People do not, as a matter of fact, often come to be believers in the one God and then add to it a statement about Jesus Christ. They reach it through Him.

Non-Christian faith and goodness.

And this is true of the genesis of their faith, although in the intellectual discussion of that faith, as was said earlier, men must ask themselves

whether they are Theists before they are qualified to discuss the Theism of Christ.

So far, in our short hour, we may indicate without developing it, one character of the line of knowledge. It is only possible now to add this further statement; that the confidence in Christ, the contemplation of Christ only becomes effectual in conviction and operative in virtue when it is held as a whole, when it is in a certain sense completed in its circle. To attempt to take parts of the truth about Christ, to choose this part and to draw the line at some other part, is exactly like attempting to produce a result by electricity with an electrical arrangement in which the circuit is broken. You have your battery, that is, you have the necessary plates and vessels; you have the acids, you have the wires, but if there is a gap in the circuit the whole contrivance is inoperative. Chemical effects do not begin in the cells, the molecular vibrations do not begin in the connecting medium, nothing moves. It is only when the circle is complete, it is only when the end becomes possible that even the beginning is liberated. And so it is with an eclectic view of Christ. It is far from being valueless; it is very precious because it is on the way to *becoming* complete. But in a certain sense of completeness, it must be complete before its justification appears. It is not without the sense of having reasons in

reserve that I shall venture, without offering reasons, upon the statement that, on the whole, and taking things at large, it is only when the faith in Christ makes in a sense the full circle, not of completed knowledge, but of ungrudging confidence ; takes, that is to say, His own account of Himself and of His doings to be true, that it becomes an operative faith producing the intimate conviction of our nearness to the Father, and yielding the effective impulse to virtue, courage, and loyalty, to those actions and tempers which, even apart from His name, we knew to be good.

You say this is a harsh judgement of the many round about us who serve God better in their conduct than we do who call upon the name of Christ. I have not forgotten that. I said in general, and on the whole. Faith in Christ has acted in great masses, in bodies ; it has acted in the building up, and in the filling of the consciousness of, a society which we can point to, which has come down from the first. There is a Spirit-bearing body reaching through the ages ; and this body, the Church (for which I would make no narrow definition, for I believe, as I have said to you before, that there is no limiting line which we can draw around it, that it is defined by its ever-glowing centre—the Heart of Jesus), this body cannot live and move in the world without creating a moral atmosphere within

itself and round about itself. It makes its own great tradition of morals ; it makes its own great mass of examples ; it radiates its own great warmth of love. And the men born within the range of this warmth, who are by accident or man's design withdrawn from the actual sharing of its sacramental blessings, cannot escape from all the effects of its presence.

The influence of the Church on those outside it.

These effects will be abundantly evident amongst those so-called non-Christian individuals who show forth more plainly than, alas ! we do, the virtues of the Christian state ; but they have inherited along with their English blood and their place amongst us, a mass of ideals, a mass of moral preferences, an immense system of training and of correction, a special range of feelings, impulses, influences, gales like gales of spring, water from Heaven itself. After all, the world about the Church is such that in many respects it is easier to do well in it than to do ill ; and consequently we can point with joy to examples of individual life which seem at first sight to weaken the argument which I have attempted to suggest.

But while they seem to weaken it they really strengthen it ; for, by what seems at first sight their independence of the real Christian life, they do but bear witness to the overpowering influence of the corporate Christian conscience ; they do but

provide further and still more telling evidence of the might with which Christ can fill the lives of men ; the working through which, by simply ruling men's hearts, He is changing the face of the earth and of society. For surely it is true, and almost all men will acknowledge it, that common human life grows better precisely in the proportion in which it genuinely answers to the word and example of Christ.

It is on such lines as that, it is through the personal link of Christ, it is by finding out what He really said concerning Himself, it is by considering the nature of the faith which He in fact originated, and the conditions of health in the social body which in fact He founded and sustains, that we trace in thought our passage from the sense of God, to the possession of a large circle of experiences, which to those outside appear like a mere accumulation of details ; but which are known to us as the developement, intrinsically single and undivided, of a perfectly simple condition of trust in Jesus Christ, God and Man. . . . . .

The present address merely suggestive.

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I am grieved to leave our discussion so seriously incomplete ; but there are particular and positive duties of a given hour, and I must, if I am to be true to any sort of conscience, release you without

further delay. I shall hope that you will not judge the strength of the faith which I most unworthily represent at this moment, and on this spot, by the degree of clearness which I have been able to give to the suggestion of one among its lines of proof.

Envoy.

It is the consolation of all our work that it is not isolated. Small indeed is the work which can be completed by small powers in a few short conferences. But that little may, in some measure, be capable of combination with weightier lessons learned in other quarters. It may even be prelude for better work to be done together by us who have met in this place. If there is any grain of good in it, it cannot be lost ; "for there is no waste in the great household" [1] wherein we serve.

[1] "For there is no waste in the great household of the master that he serves." Words spoken of the man of vocation. Rev. J. R. Illingworth, *University and Cathedral Sermons*, p. 153, ed. 1893.

X

THE AIDS WHICH SCIENCE GIVES TO THE RELIGIOUS MIND.[1]

Character of the Subject—What is required for its study—First 'Aid' of Science: truer ideas about Life—The expectation of finality recedes as knowledge advances—"Sanderson knows" —Second Aid: enrichment of analogy—Third Aid: many gains from the study of evolution—Important topics briefly enumerated—The last and greatest Aid comes by the deeper knowledge of Law—Law in Life should teach us a new affirmation about Law; not a new negation about Life—The Lines of Law and Freedom converge—The observed facts of concomitant variation point the direction of a complete reconciliation of Law and Will, of Science and Religion.

1. The subject which has been proposed to us is very welcome to me, and for this reason. We have heard enough for the present of the oppositions between science and religion. And further, for the present we have spoken enough in reference to science and religion as if they were two forces moving independently in the air; two systems, like the tides or the railways, which can be described apart

Character of the subject.

[1] A paper read before the Church Congress at Bristol, 1903.

from the consciousness which includes them. The relation between science and religion is a relation in the minds of men ; and the only form of that relation which is worth serious study *for its own sake*, or, at least, for its intrinsic value, is that relation which exists in those particular minds, which have real knowledge under both heads—science and religion. There is, of course, a great deal of real science in heads which have little consciousness of religion, and a great deal of real religion in hearts which have no natural science. But the *relation* between religion and science can only be studied after this fashion in minds which, to some considerable degree, are influenced by both. The opposition worth reconciling is not the opposition traceable between rival statements which might be set in parallel columns of print, nor the opposition between the scientist and the theologian considered as separate men, but the opposition existing in a good and wise man's mind. And, accordingly, the real synthesis of science and religion is the personal one, the combination of both, which is effected in intelligences at once devout and instructed. And the *modus vivendi* which has been reached between the two systems (which it is not our business now to analyse), is not simply a logical harmony, but is rather found in the fact that there are some men who are both religious and scientific, and under whatever

intellectual strain they may experience, live at peace within themselves. The conciliation, then, which is found in the existence of men of double sympathies, is much more valuable than the production of a logical harmony which might be available for every man who is able to read and to reason.

By such a judgement we do not disparage the logical harmony, but assert that it will be founded upon the personal harmony of existing minds; that the man in whom the two streams of knowledge, religious and natural, are combined will be able more and more clearly to explain in terms of logic the method by which the forms of truth coexist within him. I venture, then, to take the title offered to us as meaning *the effect of scientific training upon the devout mind.*

II. But while such a study is most desirable, it is not easy to get. Since the synthesis to be observed is personal, the observation of it must be personal too. There is abundant material, indeed, for something which would satisfy verbally the requirements of my version of the text. We see a good deal, and in the past we have seen a great deal more, of the effect upon the religious mind produced by *other men's* scientific studies! and an unhappy effect it often is in more respects than one. But this I conceive is not what we are

What is required for its study.

intended to talk about to-day. To describe the real thing—the effect of his own scientific training upon a devout man—who can be sufficient but the man who is himself possessed of both terms of our inquiry, the religious mind and the scientific training? I am very far from making such a claim for myself. I pretend to no more than an eager sympathy with both, and the briefest experience of that one of them which is most easily come by, the technical training; and that technical training in the department of biology only, in the study of living creatures.

At present the public interest is not focussed upon biology; though not only the accumulation of facts, but crucial studies of the greatest theoretical importance are going on there with undiminished energy. I need only refer in passing to the inquiry into zymotic disease and the amœbic origination of malaria, as one instance of many in the biological department. It is in physics that the things are done which strike public attention at this moment. And first in the application of a new control over vibratory forces—forces in many cases newly distinguished. I mean, of course—in the elaboration of what is known as wireless telegraphy, or the curative application of the Röntgen rays and of electric light. Secondly, in a further investigation of those forces, as for example, in the study of

light as itself a phenomenon of electrical interruption ; and, thirdly, in the pursuit pushed on now with fresh ardour, of that ever-distant fugitive, the discovery of what is called the ultimate constitution of matter. The Romanes Lecture of this year by Sir Oliver Lodge will give a definite idea of the extraordinary prosperity of physical science in this and other directions. So far as religion is concerned, it is the attempted completion of the mechanical theory of the universe and not any special doctrine about organic forms which seems to threaten the interests of Theism. In prefacing, therefore, that all I know is a little biology and nothing of physics and mathematics, I put myself out of line as a judge of what we are here to inquire about. I claim only a sympathy with science and with devotion.

III. The subject is further narrowed by the word "aid," pointing, I suppose, to the obvious advantages and not the apparent disadvantages of scientific training. There are cases in which the apparent disadvantages are finally the greatest aids to the believer ; because they throw faith back upon the discovery of its own laws, the canons of its conduct, the conditions of its prosperity ; because they teach devotion to cultivate the patience and honesty of the methods of physical inquiry ; and because they lead to a recovery of

that inductive or experimental element which has a place as much in religion as in physics. But we are to look, at any rate to start with, for the more immediate aids, and those not simply from nature but from science.

The contemplation of *Nature*, indeed, is always fruitful for the religious mind, or at least for those minds which find joy in the outward scene. Some religious minds there are, as there are some irreligious minds, which find little to attract them in what is before their senses. They are like the maid Anne who travelled with Charles Dickens and his wife in America. "I do not think," writes Dickens, "Anne has so much as seen an American tree. She never looks at a prospect by any chance or displays the smallest emotion at any sight whatever. She objects to Niagara that 'it's nothing but water,' and considers that 'there is too much of that.'"[1] But to many, perhaps to most religious minds, fields and sea and sky are friends and helpers whenever they are seen.

The advantages of *science* do not quite so quickly jump to the eye; for too often it has happened that science, with its necessarily limited view, with its artificial but perfectly legitimate structures of hypothesis, has had a different effect upon the mind from that which was the proper

[1] *Letters of Charles Dickens*, p. 67. (Ed. Macmillan, 1893) Letter to Austin, May 1, 1842.

result of the contemplation of nature as it is. I touch here a subject which is evidently capable of wide developement. Even within science itself, the effect of the direct observation which is its foundation is quite different from the effect of mere book-learning, much more wholesome than that of an irresponsible study of theory, like that to which some popular publications invite our brothers of the labouring ranks. There is, then, an unfavourable effect of Science which is very real, but which I do not at this time stop to analyse.

IV. Turning, then, to our defined area of observation—to science in the strict sense; to biological science as being to some extent within my own knowledge; to the real work of science as distinguished from irresponsible theorizing; and to the conditions which are created by all this in the devout mind itself—what can we choose out of the great list of happy influences for the man of scientific training? I would put as most immediately important, as most fruitful, (i) *the observation of life itself, as life.*

First 'Aid' of Science: Truer ideas about Life.

There is no material image of spiritual realities nearly so eloquent as the image of organic life. The modern progress of science has greatly enlarged the significance of this created image. We see, as men never saw before, the infinite complexity and delicacy of life. There is the exhibition of perfectly ordered

form and movement in structures inconceivably minute. We never reach the unit, we never find the raw material out of which tissues, structures, organisms are made. We never find those imagined bricks of uniform size and shape, by the arrangement of which all the varieties of living substance might be conceived to be formed. It is true that protoplasm, or proteid material, has a definite and highly complex chemical constitution—complex not only from the relatively large number of elements, but by reason of the relation between them, a relation only to be expressed by the use of high numerals in the molecular formula. But this formula does not express the *form* in which proteid material actually exists. It gives an account of it according to one particular measure, the measure of chemical analysis, and the reactions which substances exhibit towards certain tests. But in respect of organic *form* we have reached no unit. Once the cell was thought to be such a unit, not uniform in size or shape but morphologically equivalent; now I suppose the chromosomes might a little claim this name. However far we go we find the fulness of complexity, the spontaneity, and the regular process, which are characteristic of life itself. We find no merely mechanical structure, no merely mechanical movement out of which vital movements, living structures, are built. The final prize of our research

is already living. Formerly, in a more rudimentary stage of histology,[1] we used to speak of certain substances as homogeneous, or structureless. We now have the best of reasons for knowing that we never reached this structureless basis of the structures that we knew. The Chromatin of the nucleus is as much alive, and its living movements and history as much call for explanation as did the observable tissues when Schwann pointed to what for a time seemed a unit of morphology—the cell, the equivalent given thing, by the various arrangement of which various forms of tissues might be supposed to be reached. Within our knowledge, there is no such uniform brick; there is no molecule of organic structure; there is no one thing, incapable of further analysis, which is the basis of living structure and function. On the contrary, what we find in the most remote prize of examination, is in every case a body evidently complex, evidently differentiate, evidently the result and not only the source of an evolution. To say that we are further than ever from arriving at the unit, is a rough use of language which conveys, nevertheless, the real truth, that the more we know the more distant that goal evidently appears. We never spy behind the scenes of life,

[1] Histology is the study of tissues and of the structure of cells by means of the microscope.

or surprise the ultimate machinery of its effects. What we find at last is already a fact as fully organized as the outward aspect of life itself, and which bears witness (putting aside all speech of a First Cause), to facts of material life *still* unknown. Whatever be the meaning of this for controversy —and I am, perhaps, less inclined than others to dwell on it in that connection—certainly to the religious mind it is a lesson very impressive, very fit to bring home the mystery of life. Life, wherever it appears, stands as a mystery in material things, alone and original, accounted for only by other life. I am not for a moment denying, indeed I should be eager to urge, that the other studies which have regard to non-vital phenomena, that chemistry, and physics, both of mass and of molecule, contribute to physiology. The *movements* which physiological study describes have their place among other movements. The *changes* of chemical composition or of temperature which physiology deals with must be assigned their place among other such changes, by chemistry and physics. And further, there is real advantage when we can reduce the account of vital movements to terms of heat, or weight, or transfusion, of resistance to pressure and the like. But all this does not explain ; it does not bring us to the foundation either of life regarded in the abstract as a presence in the world, or of those living

substances which form the object of our actual observation.[1]

Moreover, the more knowledge we have of these facts of organic structure and function, the greater is the impression of the unknown which is made upon us. I think this point is one which is worth dwelling upon. The ignorant imagine that the bodily life has no secrets for the doctor; that we have a shell, a case, and, inside of it, works which are perfectly familiar to those who have been authorized to open the case. There may once have been doctors ignorant enough to think that what is mysterious to them is simple to the physiologist; that a sufficiently accurate, or sufficiently prolonged inquiry would make that clear which is essentially obscure. But the more fully trained a man is, just in this proportion he parts with the vision which is so simple for the simple man. Once in an Oxford Common-Room, some one was speaking of an eloquent sermon of Dr. Liddon's, in which our preacher had pointed to the mystery of the connexion between thought

The expectation of finality recedes as knowledge advances.

[1] If abiogenesis, that is, the arising of living substance from that which is not living, were to be observed, the *distinction* between living and non-living would not disappear. The transition from one to the other would have appeared. It would be a discovery surpassing almost any other that we could name, but it certainly would not rob us of the wonder of life, or enable us to reduce its character to the terms of non-living matter. We should have become contemporary spectators of the great miracle. See also p. 187.

and action, a mystery which remains even when the connexion is observed in the simplest instances.

"Sanderson knows."

"He spoke," said the reporter, "of the activities of the brain, of the correlation between its physical changes and the changes of mind. He spoke of how, through link after link, any given outward movement of the body was caused by changes in the central nervous system. But nobody knows," he concluded, "how the change of purpose and will becomes translated into the simplest of muscular actions; how the mind moves the hand. That nobody knows." "Ah!" cried a listener, "Sanderson knows"—fondly imagining that the physiologist sufficiently acute, sufficiently trained, knew a way to bridge this, perhaps essentially necessary, gap in our knowledge. Sir John Burdon-Sanderson would have been the first to smile at the opinion, with a smile a little Dantesque. The physiologist laughs at his own supposed omniscience; the histologist (that is, the man who uses the microscope) knows that, however far he may penetrate into the secrets of living structure, he is always confronted by the same spectacle of organized life. The growth of knowledge means, in this case, the growth of wonder; it makes for reverence. And this reverence is not lessened by the observed correlation of the different parts — to dismiss in a breath

what might well take up all my time—nor by the closeness of the dependence in details between thought or spiritual life, and that which is its organ, its physical basis, its material *sine quâ non*. I should say, then, that for the religious mind a scientific training in the observation of life is of definite and profound advantage.

(ii) *Analogy*. In the second place, there is the familiar encouragement which comes from analogy. Analogy also is enriched by the new minuteness of knowledge, and by its wider range. We always pointed to the striking facts of animal life, to metamorphosis, the change of the caterpillar to the butterfly, the growth of the plant. Drummond added to our stock instances some striking ones of degeneration. Instances of larval activity and of pædogenesis readily suggest parallels in the history of societies and states.[1] I would rather point

Second Aid: Enrichment of analogy.

[1] It is a little dangerous to offer any notes on technical terms, when one cannot find space for an explanation of all. Such words as cœlenterata will be found in most dictionaries. On parasitism and symbiosis van Beneden's *Animal Parasites and Messmates* (International Scientific Series) will be found a sufficient guide. Of pædogenesis I do not recall a like accessible account. The facts referred to by the word will be found under the heads *Axolotl* and *Amblystoma* in indexes, and in the article *Siredon* in the *Encyclopædia Britannica*. The word pædogenesis offers a special interpretation of the facts of the metamorphosis of a species of Siredon into a species of Amblystoma, which had been known as a distinct *genus* of amphibians.

It is thought that a certain siredon is really the larva of a certain

to analogies of a more general scope; to what might be called the gradual advance in the realization of individuality — very striking, for example, among the cœlenterata; to the wonderful facts of nutrition; to the many ways in which the whole world is linked each part to each in mutual dependence. I might point to the manner of growth, to its conditions, to its relation to death, to the meaning of death itself, its advantage to the life of the species as a whole, discussed in brilliant essays by Weismann.

All material analogies, we have said, fade before those which are supplied by life; and they are not mere analogies, but afford light for the guidance of our own conduct. We learn, for example, that expression is not a functionless decoration, but is necessary to the realization of life; the foliage necessary for the nutrition of the root. Then again, and more particularly, there are the strange phenomena of symbiosis, that extraordinarily intimate dependence of one organic form

amblystoma; and that this larva has regularly and for an indefinite time reproduced itself just as if it were an adult perennibranchiate, a large newt; and that it is shown to be a larval form because under certain circumstances it grows to an adult which is a widely different (caduci branchiate) air-breathing animal. All air-breathing amphibians have a water-breathing gilled larval form, like the tadpole of the frog. A race of tadpoles, multiplying as tadpoles, but capable of becoming frogs, would exhibit the phenomenon of pædogenesis. But pædogenesis is, of course, not indicated by the mere discovery that of two supposed species (whether of the same geuns or not) one is really the larval form of the other.

upon another, which we see, for example, in the lichen, which is a combination of two plants, each one feeding the other ; or in looser cases not strictly so to be described, like that of the anemones which the hermit crab plants upon his shell that by their stinging powers he may be protected from some fish, while the anemones are themselves no doubt assisted by his slow travels which bring them to untried waters and fresh food. There is the gloomier spectacle of parasitism so carefully worked out by Drummond ; the degradation of forms which are in earlier stages active and highly complicated, like certain of the crustacea, to the state of mere mouths, blind mouths, which only suck the life-blood of a host, for whom they do nothing in return. All this is very familiar ground. Again, there is the old comparison of the state or society to an organic form, a comparison familiar and accepted among the ancients, employed to throw light upon the nature of society and to recall men to forgotten social duties. When Menenius Agrippa told the fable of *Venter et Membra* to the Roman crowd he was telling an old story to them ; and St. Paul used the old analogy, roughly speaking, rather to point forgotten obligations of duty than to make an original statement. He appealed to the analogy as a well-known one. For us it ought to carry with it the sense of a much more delicate co-ordination,

a much stricter interdependence than most of the old teachers conceived. It ought to appear to us more absolutely impossible for one member truly to profit at the expense of others than it did in old days, when members of classes were led to suppose that their prosperity might be based upon the poverty of their neighbours, and nations imagined that commerce advanced through the ruin of other States.[1] We may point to this, to the delicacy, to the penetration, the breadth of analogy, as one of the gains which scientific study will bring to the religious mind. And further, we may say that such a study, as one of the chief fruits of analogy, shows to be quite untenable the thought of an opposition—so dangerous to religion—between vitality and order, between health and consistency of form. Yet with regard to this matter of form, the analogy will support a conception of unity consisting in identity of vital growth, and not constituted or defined by an easily described outline.

Third Aid: Many gains from the study of evolution.

(iii) In the third place, let us briefly mention the advantage of more general observations of the teaching of evolution, of natural selection, so eloquent of perfection growing out of imperfection by a process of struggle; demonstrating the reality of

[1] When I spoke of this condition of opinion as a thing of the past, it was not in irony; it was in 1903.

a true presence of life which is undisplayed and even, so to speak, unrealized, which not only is not manifested but which cannot in a full sense be said to exist; showing that through struggle the potentiality which was general or indifferentiate, works out, by success in this or that department of the fight to the various strong and beautiful forms which make up the organic population of the world. I think it will be evident that a scanty treatment of such a theme as this can be nothing but misleading. It will be our truer wisdom to have pointed in quite general terms to immense topics of encouragement which may be found in regions once, as I think, quite unreasonably, supposed to be dangerous to spiritual faith.

For I shall venture to add that evolution throws light upon the doctrine of the Fall; that it enables us to understand how a state can be at once in a real sense good, and in a real sense rudimentary; how a process of growth may be at once a real advance and yet a faulty advance; how the state in which we find ourselves may indeed be vastly greater in certain respects than the initial condition of man, and yet immeasurably removed from the state of happiness to which from that rudimentary beginning he ought to have advanced. Evolution throws light and not darkness upon the doctrine of the Fall; upon the possibilities of restoration;

Important topics briefly enumerated.

upon the necessity of salvation, not by a life other than our own, but in a life which becomes our own.

It is a familiar thought to us that the general belief in growth ought to encourage us with regard to the history, the structure, the composition of the sacred books of revelation itself as it has come to man. Truth, being pure truth in itself, yet struggles long in the darkness which cannot overwhelm it, even as life grows slowly through and in and by the conquest of the dead material, whose very character of inorganic is the negation of life.

V. But in conclusion, I would point for a moment to the illumination shed by science in its broadest possible sense upon religion. What is this broadest and most fundamental lesson of scientific inquiry? What is it which will stand fast for the student of science when many particular theories go? What is our modern gain from the long brooding over the external scene? Surely it is the universality, or at any rate the growth of our perception, of law. This which is the haunting terror of a religion distrustful of itself, is the true friend of a wise confidence in God. As the study of life advances we see that we must reject as baseless the notion that law is characteristic of certain regions and shut out from certain other

The last and greatest aid comes by the deeper knowledge of law.

regions of existence in order to make room for freedom. It used to be supposed that life was in some sense removed as an exception from the ordinary sway of mechanical necessity. If we have learnt by further studies that those conceptions of ordinary sequence which had of old been traced in respect of the movements of masses of stuff are traceable also in the actions of life, and are to be supposed as having operated in bringing the forms of life to the state in which they actually exist; surely this is a gain and not a loss. For, while we learn this, we do not lose the old knowledge of the self-government, the growth and freedom, of life.

If law penetrates the organic world, surely this should teach us that law is not inconsistent with an essential though limited freedom; for freedom of some sort and to some extent there certainly is in life.

The conclusion we ought to draw is *not a new negation about life, but a new affirmation about law*; namely, that it cannot be inconsistent with freedom *because* we find it in the living, and because we find it more evidently in proportion to the fulness and the reality of life. For we may say with a certain truth that there are among the forms of life some *more living* than others which also truly live; forms

Law in life should teach us a new affirmation about law; not a new negation about life.

in which life is more fully realized. But these are not the forms in which law is less evident, less fully realized, less completely organized.

The 'highly generalized' primitive animal consisting of one cell, presents a condition in which law is less vigorous, less delicately elaborated than it is in the vertebrate. In the low type nourishment may be received by the whole surface, by the flowing of protoplasm round food, by a mere invasion of the cell-mass; in the 'specialized' type nourishment must enter by one small aperture and pass to a difficult assimilation through a series of chambers in each of which the machinery and the conditions of the successful treatment of food are of the most elaborate and the most invariably indispensable kind.

In the low type life is continuous, reproduction is on any one of several modes in the same animal, and oftenest by mere division of substance; repair is hardly an incident, and survival no particular adventure. In the vertebrate all these things are matter of the most accurate adjustment of means to ends. There is quite a tolerable sense in which it may be said that law universally present, universally and everywhere equally real, is yet more actualized in the higher form, because it is developed in the pressure of a more numerous and more delicate series of necessities.

Yet it is surely the vertebrate which exhibits the larger self-determination; the greater power to evolve from the potentialities of the rest of the universe, that one which is actually desired. It is in the highest vertebrate, man, that you find the greatest complexity of necessities and the largest scope of self-determination. In him appears obedience. He does not move with the current or towards the most desired object. His success increases in the degree in which he follows by obedience a law known in his own being, in the rest of nature, and by the voice of Prophets. And to say obedience is to say freedom, for there can be no obedience excepting in a freely operating will.

Within the ranks of human nature the same concomitant variation of law and freedom may be observed. The savage has few wants, few necessities one might say, and a most helpless dependence upon what appear to him the incalculable gifts of nature. The civilized man with his finely adjusted life and exacting necessities, is profuse in expedients to meet them; and to provide his hardly digested food, covers the globe with his conquests, diplomacies, commerce, exchanges. The pressure under which he maintains individual lives, which in a savage state would be eliminated, acts as a challenge to the self-determined ingenuity, and this in turn extracts

from the possibilities of the world actualities which without man's will would never have been.

Life and Law do not vary inversely, so that where there is most law there is least life, and where there is most life there is least law. And in this fact we ought to find pointers to a mysterious secret which now indeed we cannot reach, but which we have strong reasons to believe in; the secret of a reconciliation which is perfect and complete between law and freedom.

If the two lines under observation were divergent within the field of observation, we should have no right to this hope. But the lines converge, they approach within the scope of our view; for in proportion as we observe the strict co-ordination, the wonderful and unerring correspondences of life, we also observe its power of relative self-determination. Nor is the growth only one of observation; it is an increase lying within the facts themselves.

The lines of law and freedom converge.

For we may say briefly that whereas all beings are under law, it is precisely those which most fully understand and most fully submit to the law as it penetrates themselves, which are also most completely set free for the accomplishment of original effects which without the strange and secret spring of living will could not have come to pass.

I submit that in this contemplation of law by modern science, and in the effort made by modern thought to destroy the barriers which once seemed to limit the reign of law,[1] we have the most general, the most lasting, and the most precious, of the aids which scientific training or scientific observation renders to the devout mind ; and this because the observed interpenetration of mechanism and will points—as to a goal still far ahead and out of sight—to the final reconciliation, for our thought, of our two mysteries of experience ; the mystery of unbending necessity, and the mystery, revealed in our consciousness, of unconquerable liberty.

The observed facts of concomitant variation point the direction of a complete reconciliation of law and will, of science and religion.

[1] We may speak of the Reign of Law, though not of the Reign of Laws. Scientific 'Laws' (law of inverse squares and so forth) do not reign. They are generalisations, less or more imperfect, made by the observing mind. But the fact that any generalisation can be made at all indicates a regularity in the sequences observed, as well as in that which observes them ; and this regularity, rather divined than either proved or assumed, is fairly spoken of in such words as 'uniformity of nature,' and 'reign of law.'

APPENDIX

Paley's Natural Theology

The instance given in the text at p. 72 is chosen for its moderate and unsensational character. It is interesting for its agreement with the Selectionist rejection of the theory of adaptations produced by Direct Effect. But the suggestion of any other natural method of production would have been equally unwelcome to Paley. His procedure is to show the presence of *purpose* by the absence of discoverable *process;* for a strong proof of Design in his system, it must be "impossible to assign any cause except the final cause," for the observed structure.

Though undertaken under the influence of a false antithesis, Paley's study of adaptations may well have been fruitful for science, and his disproof of merely mechanical 'Direct-Effects' might still in skilful hands yield support to Selectionist views.[1]

Paley useful to science.

[1] Other religiously minded writers on science might for the same reason still be read with profit. Their rhetoric, "warmed by

Paley speaks of God as of One Who had worked within the conditions of the world. His favourite word is "contrivance."

"If this is not contrivance, what is?" "In order to meet this difficulty, the eyes are made scarcely larger than the head of a corking pin."[1] Again he speaks of "the stiff robust cartilage which butchers call the pax-wax. . . . No such organ is found in the human subject. . . . This cautionary expedient is limited to quadrupeds; the care of the Creator is seen where it is wanted."[2] He overlooked the *ligamenta subflava* and *ligamentum nuchæ*. But it is not this that matters. It is the *method* of his argument.

"The Creator had to prepare for different situations, for different difficulties, yet the purpose is accomplished not less successfully in one case than in the other. . . . and without deserting the original idea."[3] "The retired under-jaw of a swine *works in the ground* . . . a conformation so happy was not the gift of chance." When we come to the chapter on Prospective Contrivances (chap. xiv.) we have further the notion of a

emotion," often lit on a particularly happy and lucid description of structures; and their teleological aim secured an appreciation of functional relations which is not always shown in a greater degree by modern writers. See, for an example, the Twelfth Dialogue of *Theron and Aspasio*, by the Rev. James Hervey, who died 1758.

[1] Natural Theology, i. 330.

[2] *Ibid.*, i. 292.

[3] *Ibid.*, i. 279.

limitation under the conditions of *Time*. "That intelligence which was employed in creation looked beyond the first year of the infant's life; yet whilst she was providing for functions which were after that term to become necessary, was careful not to incommode those that preceded them."[1]

Certainly this is not simply the "remote" Deity of the Deists. The activity spoken of is indeed in a sense past, and the conception is a very long way from that of an Immanent Divine Power. But the Power is in another sense all too much inside the world, reading its problems, managing its material with wonderful foresight, with impartial attention, with economy of effort, and with a versatility which commands the admiration of the most accomplished human critic.

And not a Deist.

Newton

Our reverence for the almost prophetic character of Newton's genius need not hide from us that, according to the mental tone of his age, he sometimes, even more than Paley, seems to speak of God as working on the world's scene with remarkable but occasional success. Of course this view may be true. There may be, and indeed *to our capacity* there are,

Newton.

[1] Natural Theology, i. 309.

exceptional *evidences* of the Unseen Power. But these are not to be relied on because they are exceptional but because they are exemplary.

He writes thus about the origin of the Solar System. Much, he seems to say, may be set down to mechanical process. "But how the matter should divide itself into two sorts; . . . or if the sun at first were an opake body like the planets, . . . or the planets lucid bodies like the sun, how he alone should be changed into a shining body whilst all they continue opake; or all they be changed into opake ones, whilst he remains unchanged; I do not think explicable by meer natural causes, but am forced to ascribe it to the counsel and contrivance of a voluntary Agent." [1]

Again, "the motions which the planets now have, could not spring from any natural cause alone, but were impressed by an intelligent Agent."

"Lastly, I see nothing extraordinary in the inclination of the Earth's axis for proving a Deity."

"There is yet another argument for a Deity, which I take to be a very strong one; but till the principles on which it is grounded are better received, I think it more adviseable to let it sleep." [2]

These last instances give a clearer and a more

[1] Sir I. Newton. Letters to Mr. Bentley. First letter. Horsley's *Newton*, vol. iv. p. 430. London, 1782.

[2] *Ibid.*, p. 431.

favourable view of the great reasoner's intention. Those parts of the world's system which seem to result from "natural causes alone," are not said to be thereby less truly the result of the creative will; but they are less available for purposes of apologetic—"for proving a Deity."

Diderot

The limitation of a given scientific discipline by its own method, a limitation which is no disaster but a condition of progress, is spoken of on p. 21.

The following passage from Diderot is interesting in this connexion. It is in his work *De l'interpretation de la Nature*, xlix.

He complains of the reasoning of the systematists in natural science, whom he calls *méthodistes*, "Mais c'est une chose trop singulière que la dialectique de quelques méthodistes pour n'en pas donner un échantillon." He gives an example from Linnaeus who, when discussing the differentiation of man as a species concludes, "Je n'ai jamais su distinguer l'homme du singe. . . . La parole n'est point pour moi un charactère distinctif; je n'admets, selon ma méthode, que des charactères qui dépendent du nombre, de la figure, de la proportion, et de la situation."

(so far Linnaeus. Diderot answers) "'Donc votre méthode est mauvaise,' dit la logique. 'Donc l'homme est un animal à quatre pieds,' dit le naturaliste."

We do not share Diderot's discontent, though Linnaeus' method, even as a method, is imperfect, and leads to a methodically false conclusion. But Diderot complains because it *is* a method. We should rather say to the naturalist, Your science is of necessity a matter of method, and by the same necessity it must take a *special*, a limited view. Only it should recognize the fact of limitation, and if possible define the limits. Linnaeus should say, Man is *anatomically* (*i.e. selon ma methode*) indistinguishable from a monkey.

But note (we should continue) that if the qualifying word is to rescue you from the charge of ridiculous conclusions or bad logic, this qualifying word must have the same qualifying force in all contexts; and anatomy must not in your next breath put forward a claim to be a philosophy of life.

It is precisely because you claim the immunities of a method that we leave your conclusion unchallenged. Indeed it was only by strict attention to your method that you managed to manufacture the conclusion at all.

You must not now ask us to accept it as

a refutation or an alternative of other conclusions which we never made, nous autres, selon votre methode à vous.

At Capetown, not so very long ago, the Malay (Moslem) authorities declared that, whatever the Museum might say, Crawfish were "Spiders" for purposes of the Moslem law. And the Mollahs were perfectly right to keep to their method, and to enforce its conclusions upon those who wished to be reckoned obedient children of Islam.

But it would be a little too bad to ask us to review our definition of *Arachnida* on that account; and when an enlightened Zoology in turn has reached fresh provisional conclusions, it must be content to say, "For purposes of Zoology, man is this or that."

Otherwise Science as well as Religion must suffer from the perpetual disturbance of study by an intellectual *fracas*.

In the science and practice of law, we have a familiar and acknowledged instance of the limitation which belongs to method. There the limitation is deliberately made and well understood by the lawyers; and moreover, they observe one set of limits when they are distributing equity, and another when awarding damages at Common Law, and again a third when they are administering penal statutes. The same admitted facts will

yield three different results of judgement under these different disciplines of the lawyers' method. The lawyers understand, but the laymen at law do not always understand this. They sometimes forget the deliberate limitations, and when the lawyers (judge and advocates together) have simply declared that in a given case a particular tooth of a particular statute will or will not bite, their decision has been used outside the Court as if it supplied an item for the general history of morals, or guidance for the developement of the Church, or defined the limits of belief "on matters about which hearts burn and souls tremble." [1]

This is not the fault of the lawyers. They make, or at least recognize, their limits deliberately, and if "the law" is in any case an unsatisfactory product, they would advise men not "to have the law of" one another in that case.

It is not so with other specialists—and we are all specialists more or less. In other studies the limitation is very often made quite unconsciously. The man who uses a given method is *doing all he can*, and is not aware that anything more can be done. His method is his vocation. It is not deliberately chosen; it is the one he can use. And he very naturally thinks it is a universal *organon*. And, indeed, in theory

[1] Dean Church on Privy Council Judgements. *Occasional Papers*, vol. ii. p. 38.

it is universally *applicable*, but its products are not the only products possible. If a man is not instinctively conscious of this truth, he does not always become aware of it by reflexion ; for a great systematist is not of necessity also a great epistemologist. He may study stars or monuments for the great gain of us all, without studying the nature of knowledge.

When one urges the reality of methodic limitation, it is very important to add that it is not *reason* or even *reasoning* which is objected to in any case whatever. There are said to be Christians who have been taught "to think reasoning wicked." They have been misled into a most unchristian school. Reasoning is precious, so far as it is reasoning. But all our reasoning is very imperfect, and some of it is worse than the rest. We do not object to reasoning when we object to reasoning badly, or without materials.

Moreover, to avoid misunderstanding, it must be repeated that the limit of a method is not theoretically a limit with respect to the field of application. Any method may justly be applied to anything whatsoever to which it *can* be applied. But the product will not always repay the process. Sometimes, as in the case of a chemical examination of sound, the answer will be purely negative —"no results obtained."

You may, for example, have a geological study

of Wordsworth's poems, or Watson's, or any other treasure of literature. But the geological description of these will not be particularly valuable. It will not *distinguish* them sufficiently from one another, or from dockyards, slag-heaps, disused omnibuses, live torpedoes, and Etruscan jewels, all of which for geology belong to the irregularities of the earth's surface caused by recent organic activity.

All sorts of things may be examined by any method. The *limit* of the method appears in the particular kind of judgement or description of the things which is obtained. And what has to be remembered is that the result of no one method is the only possible result.

Immanence

In the preface, p. xii., I have reluctantly avoided the word 'immanence.' The newer use of this word concerning God, to express the belief "that the Divine is in everything, pervading and embracing and dwelling in it" (S. Gregory of Nyssa, in Inge's *Christian Mysticism*, p. 100), is not yet wholly free from inconvenience; especially when the argument in which it appears dwells upon the impression *conveyed* by nature. For in Spinoza and other philosophical writers the sense of remaining or abiding seems to have been emphatic

in the word, so that it contained the force of 'intransitive,' and indicated a power dwelling in, *but not acting beyond*, a body. And in theology the same emphasis appeared in the word; for it indicated those actions of God which find their end within the Divine nature, in contradistinction from such a Divine act as the creation of the world. It is a question of a word, whether or no it is permanently polarized. One would be glad to learn how, if at all, this word, or its verb, is used by earlier latin ecclesiastical writers, in connexion with the Divine Presence. The *doctrine* now intended by the word can be guarded from danger of Pantheism by the balancing doctrine of Transcendence. It has no necessary connexion whatever with Stoical or any other Pantheism. S. Augustine, who pours scorn on the conception of *Anima*—or, as he calls it, *Animus—Mundi* (*De Civ. Dei*, Lib. IV. cap. xii.), gives in many forms the teaching that the very existence of things depends upon the Divine presence in them.

Doubtless the impression of "a soul of goodness" in them is by no means the *only* impression which the objects of sense give. We Christians have received words—"subject to vanity," "the creature groaneth and travaileth"—which provide for those other and darker impressions, while delivering us from the dualism which contemplation has sometimes drawn from the perplexing

and oppressive spectacle. What we see is that the sustaining element is good ; and that the evil does not belong to material existence as such.

S. Augustine may be studied in this connexion with special profit, because he had known in Manichaeism a dualistic system in earnest, and which actually afforded the foundation for a vigorous society.

THE END

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